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**YAKIMA AGRICULTURAL RESEARCH LABORATORY
CLOSURE CERTIFICATION REPORT
HAZARDOUS WASTE SEPTIC SYSTEM REMEDIATION**

VOLUME I OF II

NOVEMBER 19, 1991
Our Project Number 90042

Prepared for

U.S. DEPARTMENT OF AGRICULTURE

HONG WEST & ASSOCIATES
P.O. BOX 596, LYNNWOOD, WASHINGTON 98046, (206)774-0106

In association with
SWEET-EDWARDS/EMCON
CHEM-SAFE SERVICES, INC.
BIOSPHERICS, INC.

USEPA SF



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HONG WEST & ASSOCIATES

• Geotechnical Engineering • Hydrogeology • Materials Testing • Construction Inspection •

November 19, 1991

Lyndia Countee, Chief
Service Contracts Section
USDA/ARS
6303 Ivy Lane, Rm 762
Greenbelt, Maryland 20770-1433

RECEIVED
JAN 27 1992
RCRA COMPLIANCE SECTION

Re: Contract 53-3K06-0-24; Submittal of Closure Certification Report

Dear Lyndia:

Please find attached Yakima Agricultural Research Laboratory Closure Certification Report Hazardous Waste Septic System Remediation, submitted in partial fulfillment of the above-referenced contract under Tasks 16 and 17. This report constitutes the supporting documentation for closure certification. The closure certification letter shall be submitted under separate cover by Sweet-Edwards/Emcon. This letter will be signed and stamped by the responsible engineer in charge, Dave Aschom, P.E. As required under the regulations that apply to RCRA closure, the letter must also be signed by a representative of ARS prior to submittal to the EPA regional administrator.

The closure certification report contains information pertaining directly to the closure of the pesticide disposal septic system at YARL. Additional ground water data is covered under the previously submitted post-closure quarterly reports. A final site report will be submitted in draft and final form which will provide an overview of the entire project. Should you have any questions or need clarification, please do not hesitate to contact me.

Sincerely;

HONG WEST & ASSOCIATES


Larry West, Project Director

cc: G. Rosenthal, Sweet-Edwards/EMCON
R. Allphin, Chem-Safe Services, Inc.
P. Ourisson, Biospherics, Inc.
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SECTION 0.0 EXECUTIVE SUMMARY

This report summarizes the clean closure under 40 CFR 265.111 through 265.115 of the hazardous waste septic tank system at Yakima Agricultural Research Laboratory (YARL), located at 3706 West Nob Hill Boulevard in Yakima, Washington. The YARL facility consists of numerous office and laboratory research buildings, warehouses, storage sheds, maintenance buildings and greenhouse/hothouse buildings occupying approximately 15 % of an approximately 7.5 - acre parcel in Yakima. The remaining acreage is used for cultivation of crops and orchard trees.

The research lab has been operated by USDA since 1961. YARL's primary activity involves development of insect control technologies that benefit fruit and vegetable agriculture in the Pacific Northwest. Workers at the YARL facility used a modified septic and drainfield system to discharge dilute pesticide solutions. The system consisted of a 300 gallon concrete septic tank which drained a conventional toilet/sink and a concrete outside surface washdown pad. Tank effluent was discharged through a tile drain. Approximately 5,000 gallons of rinsate from equipment cleaning operations and less than 250 gallons of residual pesticide solutions were discharged into the system annually for about 20 years (from 1965 to 1985). The unpermitted discharges resulted in the YARL facility being investigated pursuant to two federal hazardous waste laws - Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

A preliminary study (which is the basis for the above review) was completed by Biospherics, Inc. in December, 1988. The preliminary study involved installation of four monitoring wells and limited ground water and soil sampling. The study concluded that the likelihood for ground water contamination as a result of the hazardous waste disposal activities at YARL was very low; and that removal of the septic tank system would achieve clean closure. Based on this assessment, USDA elected to pursue clean closure under 40 CFR 265 Subpart G, and issued a contract to Hong West & Associates, Inc. to manage closure on April 3, 1990.

The focus of this report is on closure of the pesticide disposal system, soil quality-related field activities and laboratory analysis. Detailed information pertaining to site history, geology, hydrogeology and ground water issues will be included in the final site Report. The purpose of this report is to provide supporting documentation for closure certification.

0.1 REGULATORY STATUS

The site is currently on EPA's Superfund National Priority List, based on the original Hazard Ranking Score of 29.33 completed in 1982 under CERCLA. As of August, 1990, YARL was ranked 1024 of a total of 1071 ranked sites (1,187 total sites). Additional regulatory information is contained within the Biospherics (1988) report.

YARL's relatively low hazard ranking was based on sparse near-surface soils data and no ground water monitoring data. A preliminary ground water monitoring study (Biospherics, 1988) included installation of four monitoring wells and one year of quarterly monitoring. This study concluded that ground water quality was generally excellent and that the likelihood for ground water contamination was very low at YARL. The study detected a variety of hazardous pesticides and carrier solvents in the tank sludge and drainfield. Based on these data, EPA ruled that YARL was subject to the requirements of 40 CFR 270, Subpart B, permitting for a Treatment Storage Disposal (TSD) facility and 40 CFR 265, Subpart G (closure of solid/hazardous waste facilities). Based on the low hazard ranking and initial ground water data, clean closure under 40 CFR 265 was undertaken instead of

initiating either a Subpart B application under RCRA or the CERCLA Remedial Investigation/Feasibility Study (RI/FS) process. This approach is consistent with Washington Department of Ecology Model Toxics Control Act Cleanup Regulation (WAC 173-340), which states that confirmed ground water contamination triggers the RI/FS process at the state level.

0.2 EXPOSURE MODEL

The exposure model developed for YARL is based on standard pathways, media and exposure routes. Available soil and ground water quality data and applicable state and federal regulations were used to develop the model. Hazardous waste disposal activities have not impacted ground water, as demonstrated by two years of monitoring. Low-parts-per-billion detections of volatile organics and pesticides in the on-site wells have not been repeated in successive rounds of sampling. There is little or no statistical basis for assuming contamination at the site due to a single detection. Average concentrations fall well below drinking water standards. A standard exposure model development was used and since the site is surrounded by residential areas, the primary exposure in the absence of ground water contamination was through soil, with the primary route of exposure being consumption of soil by the most vulnerable population in a residential setting - generally assumed to be children.

Our characterization of the hydrogeology at YARL demonstrates that there is little or no likelihood of soil contamination reaching ground water. This assumption is based upon lack of contamination, geology, climate, the presence of caliche soil horizons and the physicochemical characteristics of the pesticide contaminants of concern. Therefore, application of ground water protection-based criteria (as provided under MTCA) for soil do not appear to be appropriate or feasible. Section 173-340-740 of MTCA regulations states soil cleanup levels must be established relative to ground water protection criteria, unless it can be demonstrated that soil contamination has little chance of impacting ground water. The Washington Department of Ecology considers residential site use and exposure to hazardous substances via soil ingestion to be the maximum exposure scenario when soil quality is the problem; therefore the exposure model for YARL assumes this exposure scenario to be the "worst case" approach as defined in the Closure Plan and Project Plan.

The purpose of this report is to provide supporting documentation to certify clean closure to soil action levels in accordance with 40 CFR 265.115. Based on the approved plans, achievement of source control through septic tank, washdown pad, drainfield and limited soil removal at the YARL RCRA facility will achieve "clean closure" if the confirmation samples display concentrations below proposed soil action levels. Guidance from appropriate EPA and Ecology regulations was used to generate the action level calculations (see below). These action levels were calculated for the YARL site based on a cumulative noncarcinogenic risk estimate of less than 1.0, based on daily intake and a lifetime incremental cancer risk of less than one in a million. Changing regulations and initial soil quality data required additional action level calculations and modifications of the original (i.e. in Project Plan) action levels. In addition, the action levels were compared to Washington State MTCA method B cleanup levels (soil cleanup in residential area - most stringent).

In summary, the exposure model identified the worst case scenario of potential exposure. The risk assessment assumed that the criteria was a total risk of no greater than 1 in a million for cancer, and that the action levels were based specifically on this worst case situation. The levels were based upon the most stringent standards available in addition to the health-based determination.

Detailed calculations were based on MTCA (WAC 173-340) and EPA (Federal Register, 55 Fed. Reg. 30798, 27 July, 1990). The indicator compounds selected are DDT, (the combined total of 4,4' DDT, 4,4' DDD AND 4,4' DDE) and dieldrin, the most widespread and persistent pesticide residues at YARL that have exceeded action levels. Endosulfan (I and II) is also present, but at concentrations below calculated action levels. DDT, and dieldrin were chosen as indicator compounds due to their

persistence and widespread occurrence and also because they have the lowest acceptable cleanup criteria. The proposed action level for dieldrin is 44 ppb, based on the most recent calculations, using EPA criteria. Under MTCA, the action level has been calculated at 63 ppb. The proposed action levels (830 ppb, EPA or 1,000 ppb, MTCA) for DDT_r appear to still be valid. Therefore, based on our confirmation sampling data, none of these action levels was exceeded in the most recent rounds of sampling. Based on this information, additional soil cleanup should not be necessary at the YARL facility.

0.3 CLOSURE STATUS

Clean closure, as used herein and in the RCRA closure plan, is defined as cleanup to a level of average soil concentrations less than the established health-based criteria. Clean closure has successfully been demonstrated at YARL, and is evidenced by the following:

1. The septic tank and its contents, the washdown pad and the drainfield were removed, achieving source control.
2. Approximately 40 cubic yards of contaminated soil containing pesticides above proposed action levels have been removed from the former tank/pad area and disposed of at a licensed hazardous waste TSD facility.
3. Two background samples taken during the initial closure phase (tank/pad removal) have illustrated that low parts-per-billion levels of pesticide residues such as dieldrin and DDT_r are to be expected in this area, due to historical, legal application of these pesticides totally unrelated to the former YARL septic disposal practices. The background concentrations are generally in the same order of magnitude as the proposed action levels.
4. Analysis of soil samples has not detected significant concentrations of PCBs, volatile organics, semi-volatile organics and metals.
5. Organophosphorus pesticides, identified in the tank contents, were not present in significant quantities in site soils.
6. Dieldrin and DDT_r are the contaminants of concern due to their toxicity and because analytical results demonstrated that they were widespread and persistent at relatively high levels and have the lowest acceptable cleanup criteria. Ground water concentrations of these and other regulated pesticides did not exceed health-based criteria or action levels. Structures that showed contamination above action levels were removed. This applied to the septic tank, drainfield area and the washdown pad area.
7. Concentrations of DDT_r and dieldrin were dramatically reduced through careful overexcavation and confirmed by resampling efforts. The removal of the source material was achieved conservatively, assuming that the average concentration of each side of the excavation was an appropriate standard, rather than the average for the entire site. The final concentrations were well below (some were non-detectable) the proposed action levels; one sample was just 2 parts per billion below the 44 ppb level and 3 others were non-detects. Soils in the vicinity of the washdown pad and septic tank were removed to the extent that no detections in excess of soil action criteria were allowed to remain. The average concentrations are all well below proposed action levels.
8. Finally, actual closure efforts went beyond the level defined above, in that for the sake of public health, clean closure was only assumed after all, not the average, concentrations above criteria were removed. Thus, the most conservative and strict interpretation of the intent of RCRA was used during closure at YARL.

0.4 COMPLIANCE WITH 40 CFR 265

Following is a summary of the essential closure-related elements of 40 CFR 265, included as a reference and a checklist that demonstrates clean closure.

265.112: Closure Plan - Completed prior to initiating closure activities

265.111 Closure Performance Standard

a) Minimizes the need for further maintenance - All waste disposal units removed

b) Controls, minimizes or eliminates post-closure escape of hazardous waste -
All hazardous materials and source areas exceeding criteria removed

*265.114 Disposal or decontamination of equipment, structures and soils - Achieved in
in three phases*

265.115 Certification of closure - Accompanying letter from Sweet-Edwards/Emcon

*265.116 Survey Plat - Not required, as this is clean closure, i.e. no waste disposal units
remain on-site, therefore nothing to survey.*

SECTION 1.0 INTRODUCTION

Field activities and subsequent sampling and analysis of soils were based on the requirements of 40 CFR 265.111 through 265.115 and two EPA- Region 10 - approved documents:

Resource Conservation and Recovery Act Closure Plan, Septic System Used For Disposal of Pesticide Wastes, Yakima Agricultural Research Laboratory, Yakima Washington; September 8, 1989: Prepared by United States Department of Agriculture Agricultural Research Service.

Disposal of the Hazardous Waste Septic System In Yakima, Washington, Project Plan, May 31, 1990: Prepared by Hong West & Associates for U.S.D.A.

The sampling and analysis plan (Exhibit B in the Project Plan) provided for comprehensive background and confirmation sampling including testing for volatile organics, PCBs, semi-volatiles, metals and pesticides/herbicides. The initial confirmation/background sampling data allowed the HWA team to scope further confirmation sampling to concentrate on organochlorine pesticides as the best indicator parameters for soils at the YARL site. Confirmation sampling as used herein is defined as sampling of in situ soils remaining below or adjacent to an excavation.

Clean closure was executed in three phases, including removal of the physical structures (the tank and pad) under the original 18-Task scope of work and first overexcavation and testing , and then second overexcavation and testing, performed under an expanded scope of work (Task 19). Several other project tasks were performed concurrently with evaluation of the sampling results.

1.1 FINAL PROPOSED SOIL ACTION LEVELS

Action levels for soils at YARL were developed over four stages: 1) during preparation of the Project Plan (4/90); 2) Correction of DDT, and addition of dieldrin; 3) Additions and modifications based on 27 July, 1990 Federal Register; and 4) Final modifications based in part on MTCA (WAC 173-340) and detailed calculations of dieldrin action level.

1) *Project Plan Action Levels:*

The following pesticide compounds were initially selected for soil action level calculations based on high concentrations in the septic tank, and one or more of the following characteristics: moderate to high mobility, persistence or toxicity. Refer to the Project Plan for additional information concerning the calculations (all numbers in ppb, carcinogenic effects only):

Endosulfan (I and II)	4,250
DDT,	25
Lindane	25,500
Disulfoton	3,400
Chlorpyrifos	255,000
2,4 D	850,000

2) *New DDT, and dieldrin:*

DDT,	830
Dieldrin	5

3) *Additions and Modifications:*

DDT,	830
Dieldrin	40
Disulfoton	3,000
Endosulfan (I and II)	4,000
Endrin	20,000
Heptachlor	200
Heptachlor Epoxide	80
Hexachlorocyclohexane	500

4) *Final Action Levels for dieldrin*

FR July 27, 1990	44
MTCA	63

The above levels are the most stringent of either WAC 173-340 Method A/B or 40 CFR Parts 264, 265, 270, 271 - FR July 27, 1990. The above chronology is presented for completeness; the most recent data are to be considered valid at YARL.

1.2 TASK SUMMARIES

The task elements for each closure phase are described below:

1.2.1 Tasks 7-12, Septic tank and Washdown Pad Removal Phase One Partial Closure

- I. Remove septic tank and tank contents and washdown pad, followed by confirmation, drainfield and background sampling as per the Project Plan.
 - a) laboratory analysis of samples
 - b) evaluate results of initial confirmation/background sampling
 - c) evaluate existing action levels and revise
 - d) calculate new action levels
 - e) develop approach/scope additional soil excavation and sampling

1.2.2 Task 19.1 First Septic Tank/Washdown Pad Overexcavation Phase Two Partial Closure

- II. Perform first overexcavation of septic tank and washdown pad area and confirmation sampling.
 - a) laboratory analysis of samples
 - b) evaluate results
 - c) scope additional soil excavation and sampling

1.2.3 Task 19.2 Second Washdown Pad Overexcavation Phase Three Final Closure

- III. Perform second overexcavation of washdown pad area and pesticide-specific confirmation sampling
 - a) laboratory analysis of samples
 - b) evaluate results

1.3 SUMMARY OF FIELD ACTIVITIES

The HWA team undertook and completed the various field activities necessary for the closure of the septic tank site during the month of June, 1990 (Tank/Pad Removal, confirmation and background sampling). In October, 1990 the first overexcavation was performed. In June, 1991 the second overexcavation was performed. The purpose of the field activities was to execute the closure plan and provide necessary information to prepare the closure certification letter to meet the specific requirements of 40 CFR 265.115.

1.3.1 Project Team

The following personnel participated in the three phases of closure at YARL:

Hong West and Associates

As prime consultant/contractor, Hong West & Associates was responsible for overall coordination and execution of closure activities.

Sa Hong, P.E., Principal
Larry West-Hydrogeologist/Project Director
Doug Geller-Senior Hydrogeologist/Project Manager
Steve Greene-Associate Geologist/Site Supervisor
Dan Howard-Hydrogeologist

Biospherics Laboratories Inc.

Biospherics, Inc. was responsible for assistance in development of the sampling and analysis plan and proposed soil action levels. In addition, the Biospherics laboratory was responsible for analyzing the samples received in accordance with the project-specific sampling and analysis plan using EPA-approved QA/QC protocol.

Stuart Cohen-Groundwater Services Manager
Mary Jane Letaw-Laboratory Manager
Anita Kijak - Laboratory

Sweet-Edwards/Emcon

Sweet-Edwards/EMCON was responsible for field quality assurance/quality control, engineering inspection of closure activities, assistance in action level calculations, review of data and preparation of the closure certification letter.

David Aschom, P.E., Engineer in charge of closure
Dennis Goldman, Project Manager
Gerritt Rosenthal, Environmental Services Manager
Dale Berndt-Certified Indust. Hygienist
Mike Torpay-Environmental Engineer
William Hurley, Environmental Engineer
Denise Mills-Hydrogeologist

Chem-Safe Services Inc.

Chem-Safe Services, Inc. was responsible for coordination of excavation equipment and hazardous waste disposal management. As such, Chem-Safe completed waste profiles for tank contents and contaminated soils and arranged for proper transport and disposal of the hazardous materials in accordance with DOT and EPA regulations.

Ralph Allphin-Principal Chemist
Nicholas Smith -Chemist
Pat McGinty-Chemist
Ken Leingang-Excavator

Ponderosa Drilling

Ponderosa provided subcontract drilling services during collection of the background and drainfield soil samples.

Arthur Schroder-Field Manager
Gaylord Perkins-Driller
Robert Mills-Driller
Tom Richardson-Driller
Byron Yates-Helper
Robert Owen-Helper

1.3.2 Field Procedures

The field activities that were completed include:

1. The sampling and removal of the septic tank and its contents.
2. The confirmation sampling of the soil from within the tank excavation.
3. The removal of the concrete washdown pad and confirmation sampling of the underlying soil.
4. Soil sampling along the length of the previously decommissioned drainfield.
5. Background soil sampling from two areas outside the former waste management area

(Well installation details are contained in a separate report prepared by HWA for USDA/ARS entitled *Monitoring Well Report , Yakima Agricultural Research Laboratory*, dated August 29, 1990).

1.3.3 Sample Numbering System

A separate sample numbering scheme was devised for each phase of closure confirmation sampling. The end of each task description contains a table listing the relevant sampling details and references the sample locations maps (Figures 2 through 5).

The attached soil chemistry database (Appendix A) contains tabulated soil quality (excluding volatiles and semi-volatiles) for all three closure phases. Volume II contains the original data as reported to HWA by Biospherics, Inc.

SECTION 2.0 PHASE ONE PARTIAL CLOSURE

Phase One Partial Closure consisted of removing and disposing of the septic tank contents, the septic tank and the washdown pad and securing the site (including stockpiled soil) to protect human health and the environment, pursuant to 40 CFR 265.113 (2). This partial closure was completed between June and August of 1990.

On June 4th 1990 members of the HWA team were on-site to sample the contents of the septic tank. The data derived by the analysis of the tank contents were used in developing material handling safety procedures and for determining the hazardous waste profile prior to disposal. The tank sampling was conducted at safety level B (support zone level C) and the removal of the tank and its contents were conducted at level C (support zone level D). Atmospheric monitoring was conducted throughout the procedures utilizing a HNu Photoionization meter.

Seven days later, on June 11th, the tank and its contents were removed from the site by the HWA team. Progress was monitored by USDA representatives Nancy Comstock, George Sundstrom and Alvin Humphrey. Field notes and photographs were taken by all parties present.

2.1 REMOVAL OF SEPTIC TANK CONTENTS (Task 7)

Sample ID - ST-90 (Septic Tank, 1990)
TR-1 (Tank Rinsate)

Representatives of HWA and Chem-Safe were on site to sample the contents of the septic tank, on June 4th, 1990. Work completed on this date was monitored by USDA representative Nancy Comstock.

The soil was removed carefully from around the tank lid with shovels. An Hnu photoionization meter was used to check for leaking vapors around the tank lid. The readings were all at background levels (<.2 ppm).

Prior to opening the tank, the HWA sampling team was outfitted in level B safety gear. Level C safety gear was worn by support personnel (Refer to Plates 1 and 2 for photos). The septic tank lid was lifted and the tank opening inspected. Initial Hnu readings were about 3 ppm. The tanks contents were then sampled by the HWA sampling team consisting of Doug Geller-HWA and Ralph Allphin-Chemsafe. Examination of the tank contents indicated that it consisted entirely of liquid with very little vapor or sludge present. The tank contents were stirred and a representative sample was obtained utilizing a glass rod sampler. After sampling, the lid was put back on the septic tank and soil was placed back over the lid. The samples were sealed in jars and placed on ice within plastic coolers. The samples were then transported to the FEDEX office for overnight delivery to the Biospherics Laboratory.

Following completion of waste profiling, the contents of the septic tank were removed on June 11th, 1990. The HWA team consisted of representatives of HWA, Chemsafe and Sweet-Edwards/Emcon. This procedure was monitored by USDA Observers George Sundstrom and Alvin Humphrey. The soil over the tank was inspected visually for any obvious signs of contamination (discoloration, stains etc.) and then with a Hnu photoionization meter. No visual or instrumental anomalies were detected at that time. The soil covering the septic tank lid was removed by members of the HWA team with shovels. The soil was stockpiled on a layer of plastic sheeting. Removal of the septic tank lid was undertaken at level C safety protection.

The septic tank headspace was monitored with a Hnu photoionization meter and a reading of 3 ppm was obtained. Chemsafe personnel initially elected to pump the tank sludge with a submersible pump. Preliminary pumping efforts revealed that the tank contents were mostly liquid and could be pumped more effectively with a suction pump. Accordingly, the subcontractor switched over to a suction pump (Refer to Plate 3 for photo). The liquid was pumped into 16 plastic lined 55 gallon steel drums. During the pumping procedure the air was monitored constantly by a representative of HWA at the tank opening and at the drum filling area. Hnu readings obtained near filling drums were almost immediately above the action level of 10 ppm. Level C protection was put into place and pumping was resumed. An estimated 470 gallons of liquid was pumped from the tank prior to rinsing. The drained septic tank was high pressure rinsed utilizing tap water and a pressure washer. The tank was rinsed with approximately 200 gallons of tap water. The rinsate was pumped into 4 plastic lined 55 gallon steel drums.

A sample of the final rinse water (TR-1) was obtained upon completion and transmitted to the Biospherics lab. Any remaining solids or liquid residue that was not removed from the tank by pumping was mopped up and deposited in a steel drum.

The septic tank contents were classified according to normal RCRA waste profiling methods (see attached waste material profile, Appendix D). A total of 17 55 gallon drums (850 gallons total), which included the original contents plus the rinsate was transported by Oak Harbor Freight Lines in drums to the Chemical Processors, Inc. (Chempro) facility, 734 S. Lucille St., Seattle, Washington. Nancy Comstock of YARL signed the waste manifests on the behalf of USDA (Refer to Appendix D for hazardous waste disposal documentation and Plate 9 for a photo of secured drums prior to shipment).

2.2 EXCAVATION AND REMOVAL OF SEPTIC TANK (Task 8)

After the removal of the tank contents was completed the tank itself was removed on June 11th, 1990. Initially, Hnu photoionizer readings were taken below the tank opening after the liquid removal and rinsing process was completed. The probe indicated organic vapor concentrations of less than 1.5 ppm remaining in the tank. Utilizing a tire mounted backhoe the subcontractor (Leingang Excavating) began to methodically remove the soil over the septic tank in order to expose it completely (Refer to Plate 4 for photo). The soil was stockpiled on plastic sheeting. The size and configuration of the tank made it difficult for the backhoe operator to remove the tank in one piece. It became necessary to break the tank into several large pieces prior to removal from the excavation. The tank pieces were loaded into a dump truck and transported off site for disposal. Any soil removed during this procedure was stockpiled separately from soil excavated previously to prevent contamination. Hnu readings taken during and after the excavation were all less than 1.0 ppm and below the action level of 10 ppm.

Upon completion of the excavation the soil stockpiles (totalling about 5 cubic yards) were covered with plastic sheeting and secured. The excavation site, soil stockpiles and storage drums were cordoned off with barriers and yellow "Caution" tape at the end of the day.

2.3 PHASE ONE CONFIRMATION SAMPLING

Confirmation sampling of in situ soils remaining below the excavations was performed in order to assess/demonstrate removal of hazardous waste residues as per 40 CFR 265 Subpart G.

2.3.1 Tank Pit Soil Sampling and Background Sampling (Task 9)

During the afternoon of June 11th, 1990, the HWA team completed a soil sampling program within the tank excavation. The completed tank excavation was approximately 5 feet in width, 11 feet in length and 5.5 feet deep. Wooden planks were laid across the top of the hole to accommodate the sampling crew. The crew consisted of one HWA representative and one from Chemsafe.

The samples were taken in order from 1 to 8 as shown in Figure 3, the sample location map. As indicated on the map, samples 1 through 4 were taken from the bottom of the pit and 5 through 8 from the pit walls (Refer to Plate 5 for photo). In addition, a composite soil sample (T9-3) was prepared which included soil from the pit bottom and walls, for subsequent EPA method 8140 analysis). All of the samples were taken with stainless steel augers or scoops. The sampling equipment was washed and rinsed prior to re-use. Samples of the wash and rinse water were also taken for laboratory analysis. The sampling was undertaken at personal safety level D.

The samples were sealed in jars which were then placed in plastic coolers containing blue ice. Upon completion of the sampling the coolers were sealed and transported to the FEDEX office for overnight shipment to the Biospherics Lab.

2.3.2 Washdown Pad Disposal and Inspection (Task 10)

During the afternoon of June 11th, 1990, the HWA team completed the inspection, demolition and removal of the concrete washdown pad adjacent to the septic tank. Prior to removal, the surface of the washdown pad was examined visually and with a Hnu photoionization meter. No staining was observed. The Hnu did not detect any organic vapor concentrations above background levels emanating from the pad.

The subcontractor (Leingang Excavating) proceeded to demolish the washdown pad with a backhoe. The pad was broken into 3 foot by 2 foot pieces which were deposited by the backhoe into a waiting dumptruck (Refer to Plate 6 for photo). Occasionally, large pieces of concrete were connected by rebar which had to be cut before loading. Smaller pieces were shoveled or tossed into the backhoe bucket by a laborer prior to loading into the dumptruck. Continuous air and soil monitoring was performed by a representative of HWA during the demolition of the pad. None of the readings obtained during this period exceeded background levels.

2.3.3 Washdown Pad Soil Sampling (Task 11)

Refer to Figure 3 for sample locations.

Four soil samples were taken during the afternoon of June 11th, 1990 (one in each quadrant) within the area previously overlain by the concrete washdown pad. The samples were taken with a stainless steel sampler which was washed and rinsed after each sample. The samples were sealed in jars and iced down in plastic coolers. The samples were then transmitted by overnight courier to the Biospherics Lab.

2.3.4 Drainfield Soil Sampling (Task 12)

Soil sampling within the drainfield was conducted on June 18th and 19th, 1990, with a B-80 hollow stem auger drill rig provided by Ponderosa Drilling Co. The first set of soil samples was obtained on June 18th, 1990. At that time, however, some uncertainty remained concerning the actual location of the former drainfield. Later, it was agreed by all concerned, that the samples would be set aside and re-sampling would take place on June 19th after the former drainfield location was positively confirmed. The former drainfield was located by Denise Mills, of Sweet-Edwards/Emcon, who was on-site supervisor during the removal of the drainfield in 1988.

On June 19th, 1990, representatives of HWA and Ponderosa re-sampled the drainfield. All samples were taken utilizing stainless steel split spoon samplers (Refer to Plate 7 for photo). At each location soil was sampled at the level immediately above where caliche was encountered. The caliche level was identified initially by a marked increase in soil density (SPT blow count increase) and later confirmed visually. Prior to sampling, all the augers and samplers were steam cleaned. A clean set of augers was used at each sample location. The soil samples were removed from the split spoon and sealed within sample jars. The sample jars were kept on ice in a plastic cooler during the sampling process. The split spoons were washed and rinsed prior to re-use.

A total of 7 soil samples were taken during this task. The sample locations are marked on Figure 3. Sample number DF-7 was a duplicate of sample DF-4. Additionally, two rinsate water samples were

obtained after the sampling was completed. All samples were transmitted to the Biospherics lab at the end of the day via FEDEX.

TABLE 1 PHASE ONE CONFIRMATION SAMPLING DETAILS

(Refer to Figures 2 and 3 for sample locations)

SAMPLE NO.	MATRIX	LOCATION	DEPTH (FT)	COMMENTS
TPS-1	SOIL	TANK BOT.	7.0	
TPS-2	"	"	"	
TPS-3	"	"	"	
TPS-4	"	"	"	
TPS-5	"	SIDEWALL	4.0	
TPS-6	"	"	"	
TPS-7	"	"	"	
TPS-8	"	"	"	
WPS-1	"	WASH. PAD	1.0	
WPS-2	"	"	"	
WPS-3	"	"	"	
WPS-4	"	"	"	
DF-90-1	"	DRAINFIELD	7.0-8.5	Boring DF-1
DF-90-2	"	"	7.0-8.5	Boring DF-2
DF-90-3	"	"	6.0-7.5	Boring DF-3
DF-90-4	"	"	7.5-8.5	Boring DF-4
DF-90-5	"	"	6.0-7.5	Boring DF-5
DF-90-6	"	"	6.0-7.5	Boring DF-6
DF-90-7	"	"	***	***dup./DF-4
BGS-1	"	BACKGROUND	4.5-6.0	Boring BGS-1
BGS-2	"	"	6.0-7.5	"
BGS-3	"	"	***	*** dup. of #2
BGS-4	"	"	7.5-9.0	Boring BGS-4
T9-1	WATER	WASHWATER	N/A	
T9-2	"	DECON.RINSE	N/A	
T9-3	SOIL			see note below
T9-4	SOIL			see note below
T12-1	WATER	DECON. RINSE	N/A	
T12-2	"	WASHWATER	N/A	

NOTE: T9-3: SOIL COMPOSITE FROM TANK PIT for 8140 analysis only
T9-4: SOIL COMPOSITE FROM BGS borings for 8140 analysis only

Refer also to boring logs for drainfield and background samples presented in Appendix B.

2.4 DISCUSSION OF ANALYTICAL RESULTS

Complete analytical data are presented in Volume II. Tabulated data for pesticides and metals are presented in Appendix A, Soil Chemistry Database. Task 7-8 (tank contents/tank rinsate) samples

were taken for waste characterization purposes, utilizing EP Toxicity methodology, pursuant to SW-846 protocols. Based on the results, the tank contents were classified as wastewater contaminated with pesticides.

Task 9 (tank pit and background) samples were analyzed as per the Sampling and Analysis Plan, Section 2.1.2.2. The complete TCL process using CLP methods was done for these samples.

Volatile Organics (method 8240):

Toluene, a common solvent, was found in nearly all the background and drainfield soil samples, but not in the washdown pad or septic tank samples. The drainfield and background samples were obtained using a truck-mounted auger boring rig. Our interpretation is the toluene detections are ~~probably the result of incomplete or improper sampler decontamination procedures rather than a soil~~ quality problem. The relatively low part-per-billion concentrations are well below ground water protection based criteria for soil.

Semi-Volatiles (method 8270):

Bis (2-Ethylhexyl) Phthalate and Chysene were detected in tank pit confirmation samples and Di n butyl Phthalate was detected in one washdown pad confirmation sample. These may be transformation products of the various pesticides found in the soils at YARL, or may possibly represent laboratory error.

Organophosphorus Pesticides (method 8140):

Analysis for highly toxic but unstable compounds in this group was added due to the results of the septic tank contents sampling (Task 7), for completeness. One composite sample from the tank pit and one composite sample from the background borings were analyzed as per the Sampling and Analysis plan. Phorate (44 ppb) and disulfoton (12,000) were detected in the tank pit composite (T9-3). The proposed action level for disulfoton (3,400 ppb) was exceeded.

Organochlorine Pesticides/PCBs (method 8080):

Numerous pesticide compounds were detected, the most common being endosulfan I and II, dieldrin and DDT. Refer to the Pesticide detections summary table prepared by Biospherics, and Appendix A for detailed listings of compounds detected. In summary, DDT and dieldrin action levels were exceeded in the tank pit and washdown pad, necessitating further soil cleanup (removal) actions.

TCL Metals, plus mercury and cyanide (methods 6010,7000s,9010 7470)

Overall, concentrations of metals were comparable (same order of magnitude) to the levels detected in the background samples. No clear correlation exists between metals in soil and pesticides in soil at YARL. None of the levels detected exceed known soil action levels.

SECTION 3.0 PHASE TWO PARTIAL CLOSURE

Soil sampling and analysis in the former drainfield (removed prior to HWA's contract) revealed pesticide concentrations below action levels, and at levels similar to those detected during the Biospherics (1988) study. Based on this assessment, no further action was taken in the drainfield area. Action levels for soils beneath the former septic tank and washdown pad were exceeded for disulfoton, DDT and dieldrin. Accordingly, the clean closure effort was modified to include limited overexcavation of soils immediately adjacent to and below the former tank and pad. Phase Two

Partial Closure consisted of overexcavation of soils and confirmation sampling, and was completed between October, 1990 and January, 1991.

3.1 FIRST OVEREXCAVATION

Members of the Hong West Team mobilized to the YARL site again on October 23, 1990. A sequential program of soil excavation and stockpiling was followed, as described in the modified Task 19 scope of work. Based on the results of the previous sampling, the original 5 cubic yard stockpile and the first one foot lifts from each excavation were determined to be contaminated and required off-site disposal. The scope of work included the following:

1. Remove two feet from the septic tank pit bottom in one foot lifts.
2. Remove one foot of soil from the septic tank pit walls.
3. Remove two feet of soil from the bottom of the washdown pad excavation in one foot lifts.
4. Stockpile soils from first lifts with existing stockpile for disposal.
5. Sample soils from second lifts for pesticides.
6. Perform confirmation sampling of undisturbed soils at limits of new excavations and analyze as per project sampling and analysis plan.

3.2 CONFIRMATION SAMPLING (Task 19.1)

The procedure used in the first phase of confirmation sampling was used again during the overexcavation confirmation sampling. A stainless steel sampler was used and was decontaminated between samples. Field procedures were carried out at Level C personal protective equipment, with air monitoring performed using a HNU photoionization device. The samples were sealed in jars and iced down in plastic coolers. The samples were then transmitted by overnight courier to the Biospherics Lab. Refer to Plate 8 for photo of the washdown pad excavation.

3.2.1 Tank Pit Soil Sampling

Six samples were obtained from the enlarged tank pit excavation, four from the sides and two from the tank bottom. Refer to Figure 4.

3.2.2 Washdown Pad Soil Sampling

Two samples were obtained from the deepened washdown pad excavation, one from the center of the western half, one from the center from the eastern half. Refer to Figure 4.

TABLE 2 - PHASE TWO CONFIRMATION SAMPLING DETAILS

SAMPLE NO	MATRIX	LOCATION	DEPTH (FT)	COMMENTS
TP-101	SOIL	TANK BOT.	9.0	
TP-102	"	"	"	
TP-103	"	SIDEWALL	5.0	
TP-104	"	"	"	
TP-105	"	"	"	
TP-106	"	"	"	
WP-101	"	WASHPAD EX.	3.0	
WP-102	"	"	"	
T19-1	WATER	DECON. RINSE	N/A	TANK PIT
T19-2	"	WASHWATER	N/A	"
T19-3	"	DECON RNSE	N/A	WASHPAD
T19-4	"	WASHWATER	N/A	"

NOTES: Samples L2-1 (Second lift of Tank Pit Excavation) and L2-2 (Second lift of Washdown Pad Excavation) were taken from backhoe bucket, for waste profiling purposes and represent soil subsequently removed from the site (not confirmation samples). Refer to Appendix A and Volume II for analytical results.

3.3 DISCUSSION OF ANALYTICAL RESULTS

Complete Task 19 analytical data are presented in Volume II. Tabulated data for pesticides and metals are presented in Appendix A, Soil Chemistry Database.

Task 19 washdown pad and septic tank pit samples were analyzed as per the Sampling and Analysis Plan, Section 2.1.2.2. The complete TCL process using CLP methods was performed for these samples.

Volatile Organics (method 8240):

No volatile organic compounds were detected.

Semi-Volatiles (method 8270):

Bis (2-Ethylhexyl) Phthalate was detected in sample WP-102 at 2000 ppb, but was not detected in the background samples. As noted in the Section 2.4, this compound may be related to biodegradation of pesticides in soil or may be a lab contaminant. This detection is not considered significant.

Organophosphorus Pesticides (method 8140):

No organophosphorus pesticide compounds were detected.

Organochlorine Pesticides/PCBs (method 8080):

Numerous pesticide compounds were detected, the most common being endosulfan I and II, dieldrin and DDT. Refer to the Pesticide detections summary table prepared by Biospherics (Volume II), and Appendix A for detailed listings of compounds detected. In summary, DDT, and dieldrin action levels were exceeded in the washdown pad excavation, necessitating further soil cleanup (removal) actions.

TCL Metals, plus mercury and cyanide (methods 6010,7000s,9010 7470)

Overall, concentrations of metals were comparable (same order of magnitude) to the levels detected in the background samples and previous confirmation samples. No clear correlation exists between metals in soil and pesticides in soil at YARL. None of the levels detected exceed known soil action levels.

SECTION 4.0 PHASE THREE FINAL CLOSURE

Phase Three Final Closure consisted of a second overexcavation of the washdown pad area, confirmation sampling/evaluation and final disposal of all previously stockpiled soil and contaminated materials. This portion of closure was completed between June, 1991 and October, 1991.

4.1 SECOND OVEREXCAVATION

*Sample ID: A,B,C,D (Washdown Pad Samples at 5 foot depth)
Rinsate/Wash Water (self explanatory)*

Refer to Figure 5 for the sample locations.

Action levels were not exceeded for the Task 19.1 confirmation samples taken from the septic tank pit. Therefore, no further action was deemed necessary at the septic tank pit. Action levels for DDT, and dieldrin were exceeded in one sample (WP-101) from the Washdown Pad excavation. The work effort for the second overexcavation consisted of removing an additional two feet of soil from the excavation bottom (for a total of five feet removed). Members of the Hong West Team performed the field activities on June 12, 1991. Work was performed by HWA and Chemsafe and observed by a representative of the the Sweet-Edwards/Emcon engineer in charge.

4.2 CONFIRMATION SAMPLING (Task 19.2)

Excavation of soils was immediately followed by collection of four confirmation samples from approximately 0.5 feet below the excavation bottom. The identical sampling procedures and equipment were used during the second overexcavation as were used during the previous sampling events; refer to Figure 5 for sample locations.

4.3 DISCUSSION OF ANALYTICAL RESULTS

Indicator compounds (dieldrin and DDT_r) were chosen prior to the second overexcavation; hence, only pesticide-specific sampling was performed. DDT_r levels were all less than 10 ppb (2 orders of magnitude below action level). Dieldrin was non-detected in 3 of 4 samples. The detection (sample D) was 42 ppb. Low concentrations of endosulfan and endosulfan sulfate were also detected.

4.4 FINAL REMOVAL OF HAZARDOUS MATERIALS

After the additional soil was removed from the excavation and sampling was completed, all of the excavated soil was removed from the site (Refer to Appendix B for hazardous waste disposal documentation). The excavations were backfilled with clean fill and compacted in one-foot lifts at optimum moisture content. Following backfill, the material was probed with a steel rod and estimated to be medium dense to dense.

Additional (probably nonhazardous) soils in drums (drill cuttings) remained on site from the 1988 investigation. This material was scheduled for final profiling and removal in November, 1991, and constitutes the final removal action under this closure project.

SECTION 5.0 DATA VALIDATION

The analytical data from the three phases of closure sampling were reviewed for quality assurance and quality control. The data consisted of 24 samples from the excavated tank and washdown pad areas, 6 samples from the drainfield and 4 background samples. The samples were checked for appropriate holding times, chain-of-custody documentation, and the adequacies of blanks, duplicates and surrogates. In addition, data were evaluated statistically according to the requirements of SW-846. For the purposes of the QC review, only the last round of samples from each site were statistically evaluated (21 total). The evaluation of the data indicated that the sampling and analysis protocol as detailed in the May 31, 1990 Project Plan satisfied industry-accepted methods and that samples taken were adequate for representation of the site for characterization. No major irregularities were observed in the data testing and analysis that would require a significant reevaluation, although minor difficulties were noted in the reporting of surrogate analysis.

The laboratory reports indicated that the surrogate and replicate analysis fell within acceptable criteria, but data was not provided for this purpose. A detailed discussion of the statistical analysis is provided in Appendix C.

SECTION 6.0 CONCLUSIONS AND RECOMMENDATIONS

The YARL hazardous waste septic system has been successfully closed. Partial closure (consisting of removals, testing and evaluations) was achieved during the period from June, 1990 to October, 1990. Final closure (consisting of removals, testing and evaluations) was achieved during the period from June, 1991 through October, 1991. Removal of all units was supervised and observed by representatives of Hong West & Associates and Sweet-Edwards/Emcon for the purposes of closure certification. These activities were reported to Dave Aschom, P.E., the responsible engineer

in charge as required under 40 CFR 250. Field notes were taken to document site removal activities and sample locations.

Based on the sampling and analysis data presented herein, and the proposed YARL project soil action levels, the Hong West Team recommends that USDA/ARS propose clean closure of the YARL facility to EPA Region 10 and Washington Department of Ecology. The procedures and requirements of 40 CFR 265.111 through 265.115 have been met. Measured concentrations of pesticides in soils at YARL appear to meet applicable soil cleanup criteria. Application of ground water protection-based MTCA regulations by either agency (EPA or DOE) does not appear to be appropriate or feasible. Two years of ground water monitoring data from YARL monitoring wells support this interpretation. The hazardous waste septic system has been completely removed from YARL, and affected soils have been removed until individual concentrations of indicator compounds were all below applicable health-based criteria. Because of anticipated future residential site usage, strict adherence to the criteria (as opposed to averaging concentrations across the entire site) was followed. This conservative approach provides an additional factor of safety.

SECTION 7.0 LIMITATIONS

The purpose of this report was to provide supporting documentation for closure certification under 40 CFR 265.115. This report is submitted in partial fulfillment of Hong West & Associates, Inc.'s contract with U.S.D.A. The report and the closure certification letter (provided under separate cover) may be used by U.S.D.A. and local, state and federal regulatory agencies which have an interest in this project. The conclusions presented in this report are not to be construed as scientific or engineering certainties, but rather as a statement of professional opinion based upon knowledge, experience and belief. No other warranty, expressed or implied, is made.

FIGURES



USGS YAKIMA QUAD

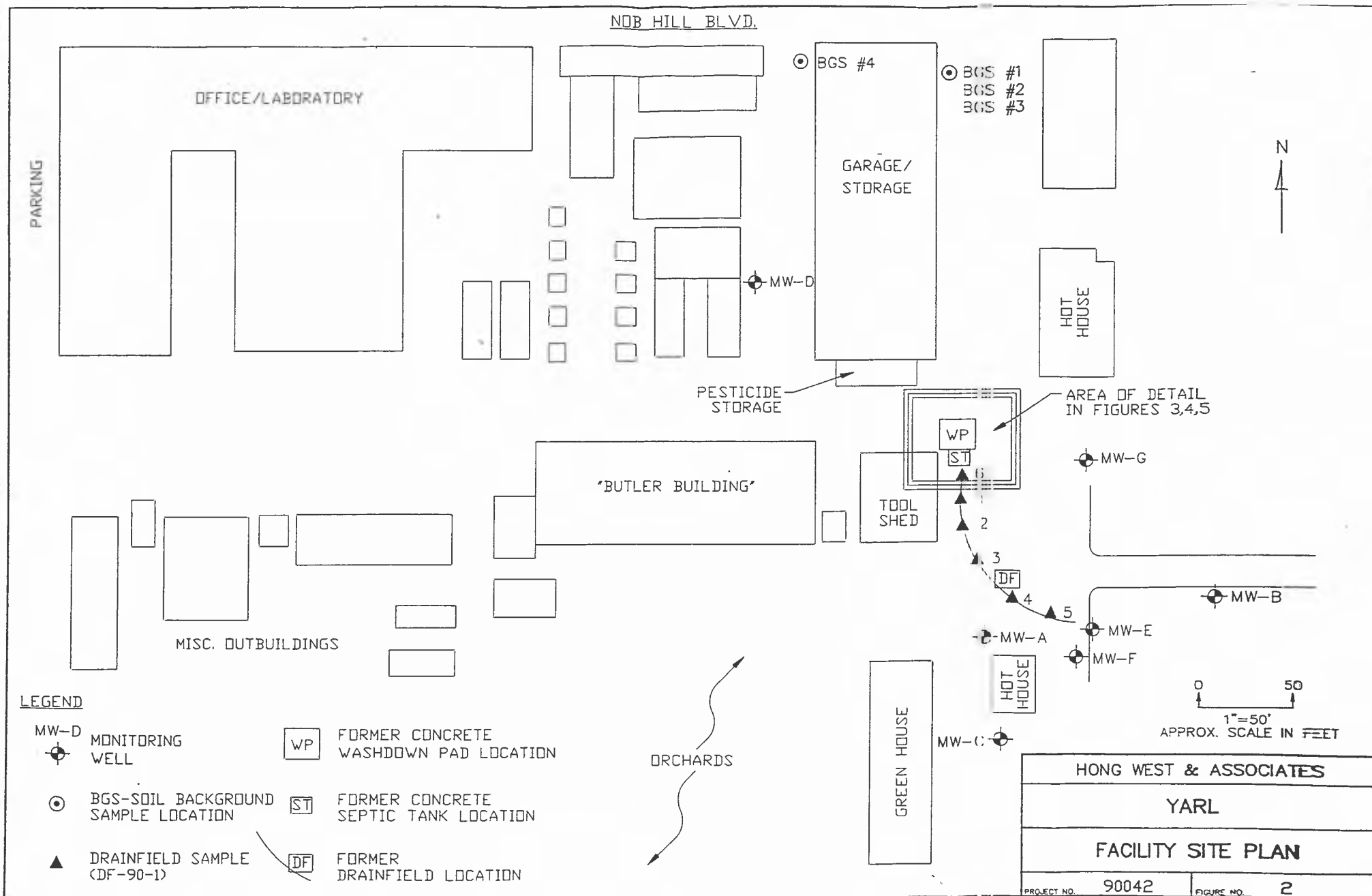
HONG WEST & ASSOCIATES

YARL

LOCATION MAP

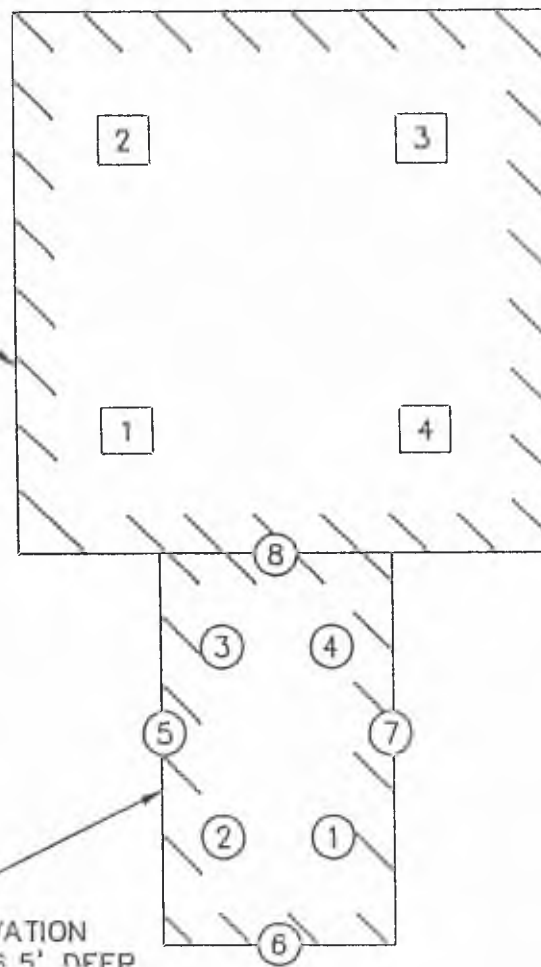
PROJECT NO. 90042

FIGURE NO. 1

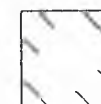


WASHDOWN PAD
EXCAVATION
14' X 14' X 1' DEEP

SEPTIC
TANK EXCAVATION
5' X 10' X 6.5' DEEP



LEGEND



LIMITS OF EXCAVATION



WASHDOWN PAD SAMPLE
(WPS) @ 1' DEPTH

WPS-1 THRU WPS-4
AT 1' BELOW BOTTOM
OF WASHDOWN PAD



TANK PIT SAMPLE (TPS)
TPS-1 THRU TPS-4 @ 7'
DEPTH ON BOTTOM

T9-3 COMPOSITE OF
GRABS FROM WALLS
AND BOTTOM

TPS-5-8 @ 4' DEPTH
ON EXCAVATION SIDEWALL

0 5
APPROX. SCALE IN FEET

HONG WEST & ASSOCIATES

YARL CONFIRMATION
SAMPLING 6/11/90

TANK/PAD REMOVAL
TASK 9-11

PROJECT NO. 90042

FIGURE NO. 3



LEGEND

102

WASHDOWN PAD
(WP) @ 3' DEPTH

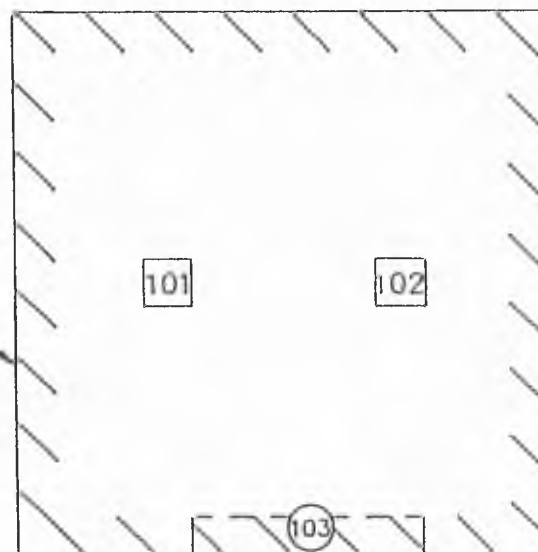
102

TANK PIT SAMPLE (TP)

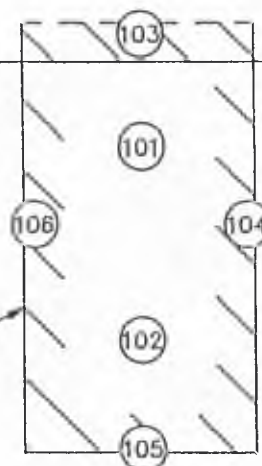
101 AND 102 ARE AT
9' DEPTH ON BOTTOM

103 THRU 106 ARE AT
5' DEPTH IN EXC. SIDEWALL

DEEPEMED
WASHDOWN PAD
EXCAVATION
14' X 14' X 3' DEEP



ENLARGED/DEEPEMED
TANK PIT EXCAVATION
6' X 11' X 8.5' DEEP



0 5
APPROX. SCALE IN FEET

HONG WEST & ASSOCIATES

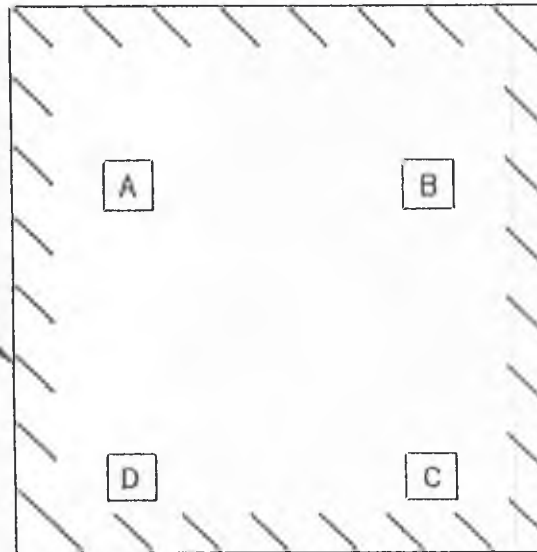
YARL CONFIRMATION
SAMPLING 10/23/90

FIRST OVEREXCAVATION
TASK 19.1

PROJECT NO. 90042

FIGURE NO. 4


DEEPENED
WASHDOWN PAD
EXCAVATION
14' X 14' X 5' DEEP



BACKFILLED
TANK PIT

0 5
APPROX. SCALE IN FEET

LEGEND

 WASHDOWN PAD
SAMPLE @ 5' DEPTH



HONG WEST & ASSOCIATES
YARL CONFIRMATION
SAMPLING 6/12/91
SECOND OVEREXCAVATION
TASK 19.2

PROJECT NO. 90042

FIGURE NO. 5

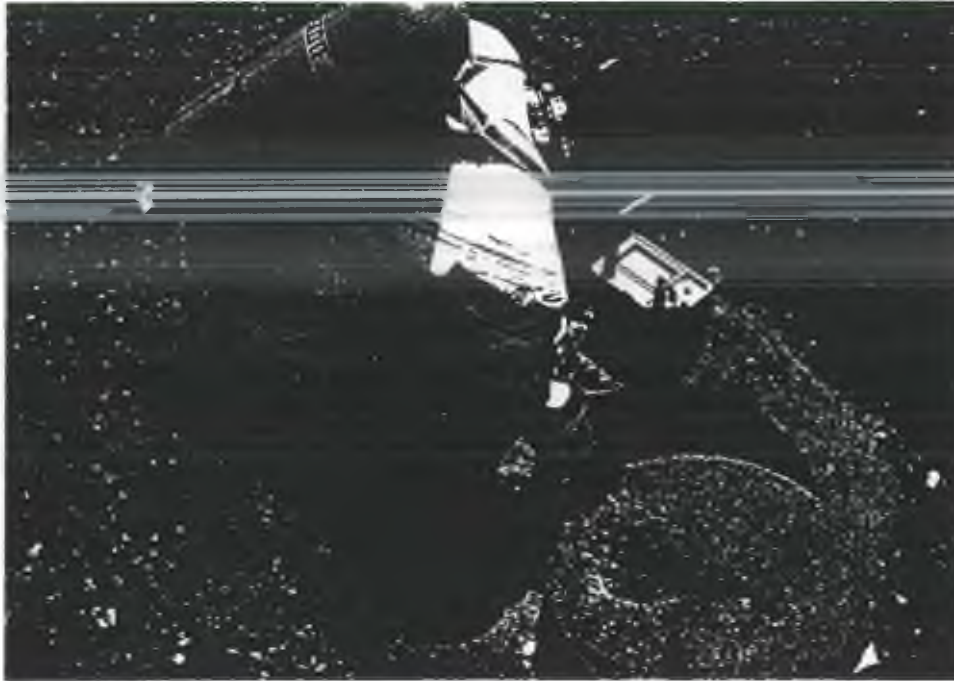


Plate1. The sampling of the septic tank was conducted under level B safety protection with the aid of an air monitoring device (6-4-90). Task 7.

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Project # 90042

Plate 1



Plate 2. The septic tank contents were sampled under level C safety protection supplemented with air monitoring. (6-4-90). Task 7.

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Plate 2

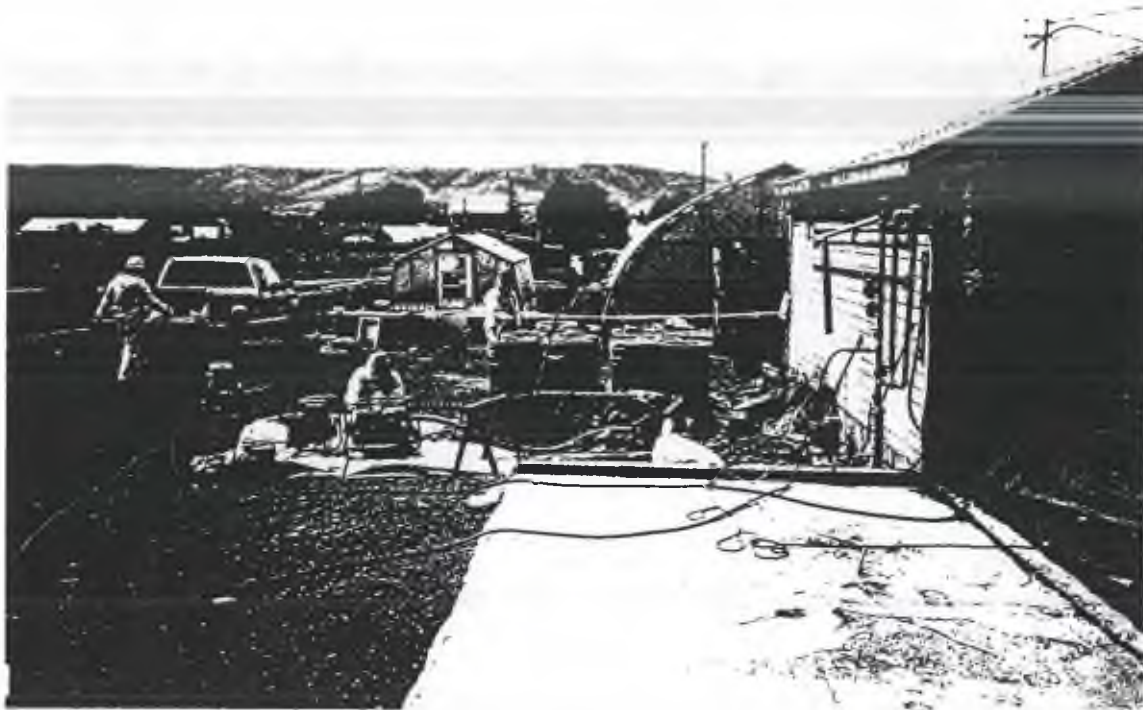


Plate 3. The contents of the septic tank were removed by pumping the liquid into steel drums.(6-11-90). Task 8.

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Project # 90042

Plate 3

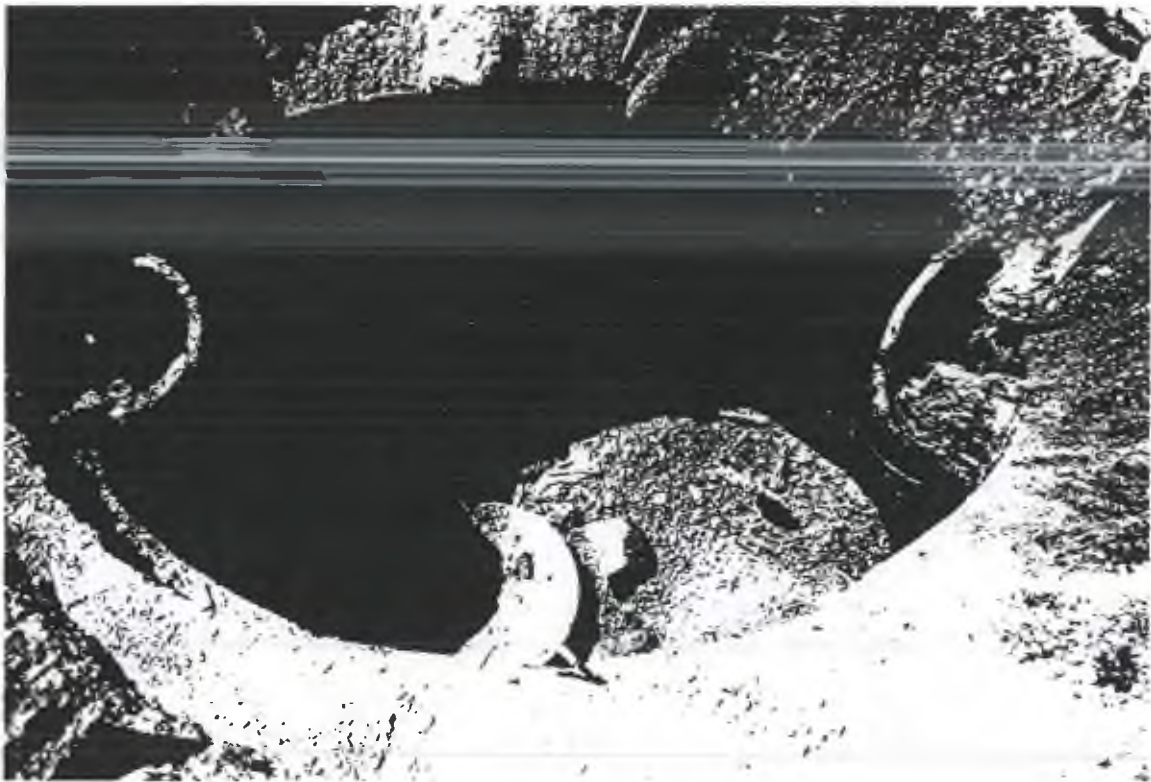


Plate 4. This photograph illustrates the condition of the interior of the septic tank prior to final rinse and removal(6-11-90). Task 8.

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Plate 4



Plate 5. The confirmation sampling of the tank pit was undertaken at personal safety protection level D (6-11-90). Task 9.

Yakima Agricultural Research Laboratory Project

Hong West & Associates
Project # 90042

Plate 5

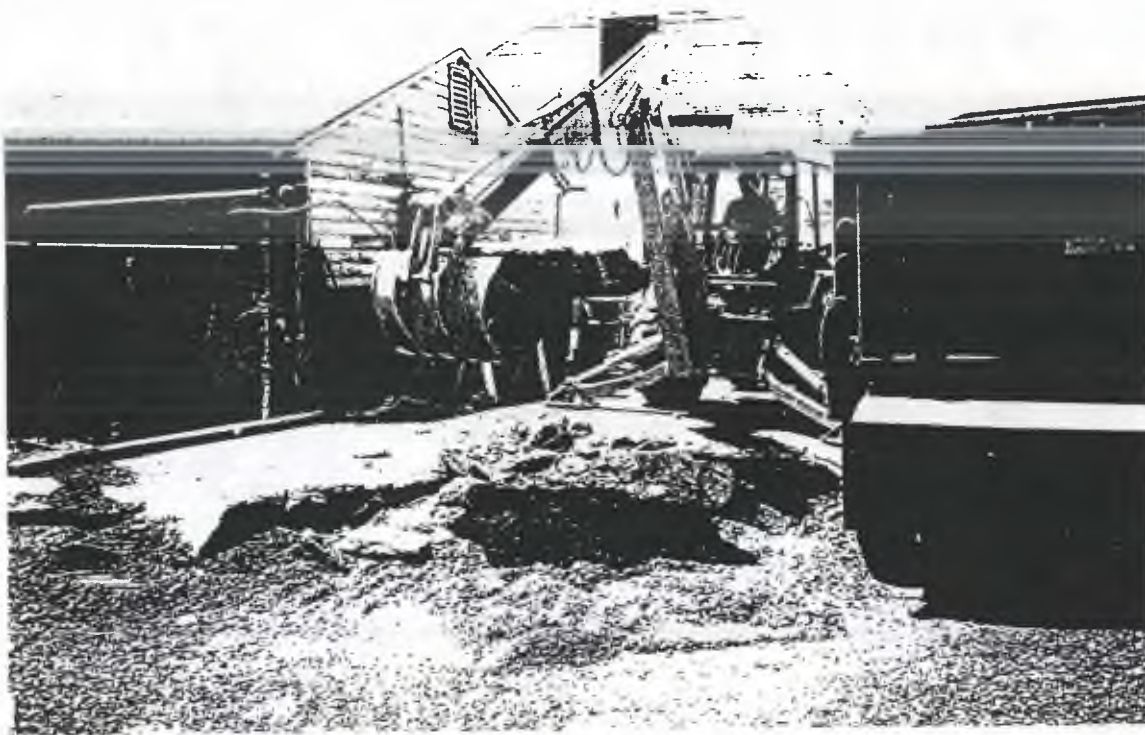


Plate 6. Removal of the Washdown Pad was undertaken utilizing a backhoe equipped with an enclosed cabin for the operator. (6-11-90) Task 10.

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Project # 90042

Plate 6



Plate 7. Drainfield soil sampling was undertaken with a truck mounted hollow stem auger drill rig. (6-19-90) Task 12.

Yakima Agricultural Research Laboratory Project

Hong West & Associates
Project # 90042

Plate 7

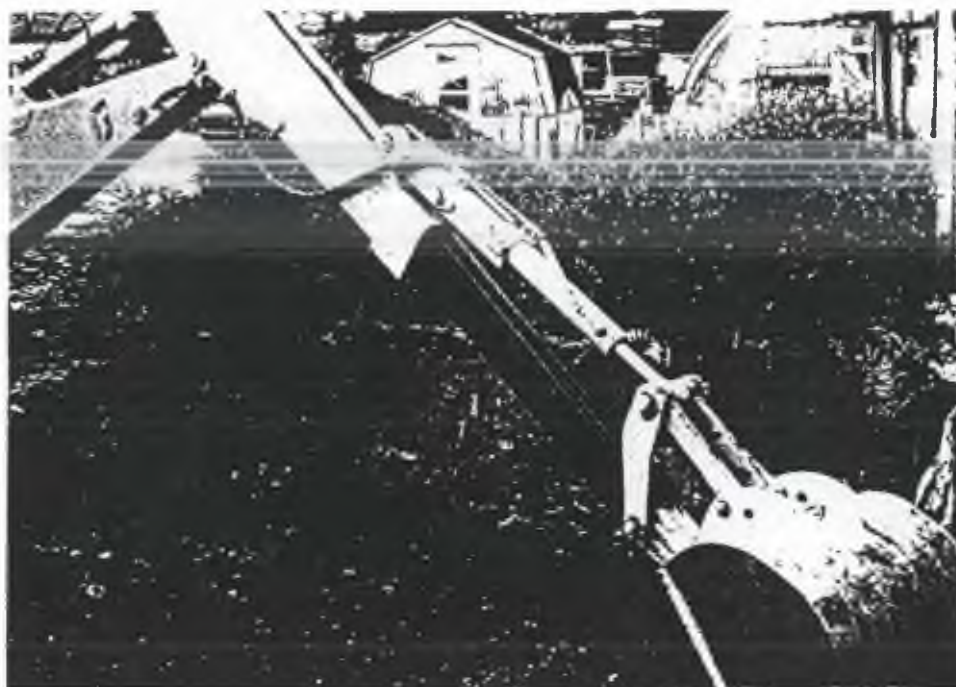


Plate 8. The overexcavation of the Washdown Pad area was conducted with a backhoe. (10-23-90) Task 19.

Yakima Agricultural Research Laboratory Project

Hong West & Associates
Project # 90042

Plate 8



Plate 9. The contents of the septic tank were sealed in labeled steel drums which are seen here prior to shipment to a disposal facility. (7-90).

Yakima Agricultural Research Laboratory Project

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Project # 90042

Plate 9

APPENDICES

APPENDIX A - SOIL CHEMISTRY DATABASE

YARL Laboratory Database: Soil Confirmation Sampling

Tank and Washdown Pad Removal (Tasks 7-10)

Sampling Date: June 11 and 19, 1990

Units = ug/kg soil, and ug/L water

Method: Water sw 3510/8080, Soil 3550/sw8080

*ST90 and TR-1 EP TOXICITY RESULTS ONLY

Parameter:	Sample Number										
Pesticides/PCBs	ST-90	TR-1	T9-1	T9-2	T12-1	T12-2	BGS-1	BGS-2	BGS-3	BGS-4	TPS-1
Matrix	Sludge	Water	Water	Water	Water	Water	Soil	Soil	Soil	Soil	Soil
Alpha-BHC	NA	NA	<0.02	<0.02	<0.02	<0.02	<0.8	<0.8	<7.6	<0.7	<2.0
Beta-BHC	NA	NA	<0.02	<0.02	<0.02	<0.02	<0.8	<0.8	<7.6	<0.07	<2.0
Delta-BHC	NA	NA	<0.02	<0.02	<0.02	<0.02	<0.8	<0.8	<7.6	<0.7	<2.0
Lindane	NA	<20	<0.02	<0.02	<0.02	0.03	<0.8	<0.8	<7.6	<0.7	<2.0
Heptachlor	NA	NA	<0.02	<0.02	<0.02	0.42	<0.8	<0.8	<7.6	<0.7	<2.0
Aldrin	NA	NA	<0.02	<0.02	<0.02	0.39	<0.8	<0.8	<7.6	<0.7	<2.0
Heptachlor Epoxide	NA	NA	<0.02	<0.02	<0.02	0.09	<0.8	<0.8	<7.6	<0.7	<2.0
Endosulfan I	NA	NA	0.04	0.75	1.6	2.0	<0.8	<0.8	<7.6	<0.7	2300
Dieldrin	NA	NA	0.02	0.19	0.31	1.8	<0.8	3.3	13	<0.7	62
4,4'-DDE	NA	NA	0.04	0.43	0.95	2.5	0.97	130	160	<0.7	320
Endrin	70	<20	<0.02	<0.02	<0.02	1.4	<0.8	<0.8	<7.6	<0.7	<2.0
Endosulfan II	NA	NA	<0.02	<0.02	0.21	1.3	<0.8	<0.8	<7.6	<0.7	710
4,4'DDD	NA	NA	0.03	<0.02	<0.02	0.18	<0.8	<0.8	<7.6	<0.7	280
Endosulfan Sulfate	NA	NA	<0.02	<0.02	<0.02	0.67	<0.8	<0.8	<7.6	<0.7	<2.0
4,4'-DDT	NA	NA	0.07	0.30	0.47	0.69	<0.8	120	140	<0.7	820
Methoxychlor	NA	<20	<0.02	<0.02	<0.02	<0.02	<0.8	<0.8	<7.6	<0.7	4.8
Endrin Aldehyde	NA	NA	<0.02	<0.02	<0.02	0.20	<0.8	<0.8	<7.6	<0.7	<2.0
Chlordane	NA	NA	<0.12	<0.16	<1.6	<1.6	<62	<6.1	<6.1	<5.0	<16
Toxaphene	NA	<100	<1.0	<1.0	<10	<10	<39	<39	<38	<37	<100
Arochlor-1016	NA	NA	<0.2	<0.2	NA	NA	NA	NA	NA	NA	<20
Arochlor-1221	NA	NA	<0.2	<0.2	NA	NA	NA	NA	NA	NA	<20
Arochlor-1232	NA	NA	<0.2	<0.2	NA	NA	NA	NA	NA	NA	<20
Arochlor-1242	NA	NA	<0.2	<0.2	NA	NA	NA	NA	NA	NA	<20
Arochlor-1248	NA	NA	<0.2	<0.2	NA	NA	NA	NA	NA	NA	<20
Arochlor-1254	NA	NA	<0.2	<0.2	NA	NA	NA	NA	NA	NA	<20
Arochlor-1260	NA	NA	<0.2	<0.2	NA	NA	NA	NA	NA	NA	<20

YARL Laboratory Database: Soil Confirmation Sampling

Tank and Washdown Pad Removal (Tasks 7-10)

Sampling Date: June 11 and 19, 1990

Units = ug/kg soil, and ug/L water

Method: Water sw 3510/8080, Soil 3550/sw8080

Parameter:	Sample Number										
Pesticides/PCBs	TPS-2	TPS-3	TPS-4	TPS-5	TPS-6	TPS-7	TPS-8	WPS-1	WPS-2	WPS-3	WPS-4
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Alpha-BHC	<2.0	<0.2	<2.0	<2.0	<2.0	<2.0	<2.0	<19	<2.0	<2.0	<19
Beta-BHC	<2.0	<0.2	<2.0	<2.0	<2.0	<2.0	<2.0	<19	<2.0	<2.0	<19
Delta-BHC	24	12	9.7	<2.0	<2.0	<2.0	<2.0	<19	<2.0	<2.0	<19
Lindane	<2.0	<0.2	<2.0	<2.0	<2.0	<2.0	<2.0	<19	<2.0	<2.0	<19
Heptachlor	<2.0	<0.2	<2.0	<2.0	<2.0	<2.0	<2.0	<19	<2.0	<2.0	<19
Aldrin	<2.0	<0.2	<2.0	<2.0	<2.0	<2.0	<2.0	<19	<2.0	<2.0	<19
Heptachlor Epoxide	<2.0	<0.2	<2.0	<2.0	<2.0	<2.0	<2.0	<19	<2.0	<2.0	<19
Endosulfan I	1100	1400	670	560	250	31	23	<19	<2.0	<2.0	<19
Dieldrin	23	21	14	25	12	5.1	4.9	240	<400	390	560
4,4'-DDE	94	24	65	120	18	14	<2.0	170	2600	3200	310
Endrin	<2.0	<0.2	<2.0	<2.0	<2.0	<2.0	<2.0	<19	<2.0	<2.0	<19
Endosulfan II	630	620	550	40	66	14	6.0	<19	<2.0	<2.0	<19
4,4'DDD	58	14	<2.0	140	30	<2.0	<2.0	<98	<400	<390	<19
Endosulfan Sulfate	280	190	310	33	49	<100	<2.0	<19	<2.0	<2.0	<19
4,4'-DDT	210	30	120	440	58	160	9.8	710	4100	5300	530
Methoxychlor	38	<0.2	35	<2.0	14	<100	<2.0	<19	<2.0	<2.0	<19
Endrin Aldehyde	<2.0	<0.2	<2.0	<2.0	<2.0	<100	<2.0	<19	<2.0	<2.0	<19
Chlordane	<16	<16	<16	<16	<17	<16	<16	<150	<16	<16	<160
Toxaphene	<100	<100	<100	<98	<100	<100	<100	<970	<99	<98	<990
Arochlor-1016	<20	<20	<20	<20	<21	<20	<20	NA	NA	NA	NA
Arochlor-1221	<20	<20	<20	<20	<21	<20	<20	NA	NA	NA	NA
Arochlor-1232	<20	<20	<20	<20	<21	<20	<20	NA	NA	NA	NA
Arochlor-1242	<20	<20	<20	<20	<21	<20	<20	NA	NA	NA	NA
Arochlor-1248	<20	<20	<20	<20	<21	<20	<20	NA	NA	NA	NA
Arochlor-1254	<20	<20	<20	<20	<21	<20	<20	NA	NA	NA	NA
Arochlor-1260	<20	<20	<20	<20	<21	<20	<20	NA	NA	NA	NA

YARL Laboratory Database: Soil Confirmation Sampling

Tank and Washdown Pad Removal (Tasks 7-10)

Sampling Date: June 11 and 19, 1990

Units = mg/kg dry weight soil, and ug/L water

Method: Water sw 3510/6010, Soil 3550/sw7471

Parameter	Sample Number													
TCL metals	TR-1	T9-1	T9-2	T12-1	T12-2	BGS-1	BGS-2	BGS-3	BGS-4	TPS-1	TPS-2	TPS-3	TPS-4	TPS-5
Matrix	Water	Water	Water	Water	Water	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Aluminum	NA	2560	37800	91200	8980	7900	8780	7780	9680	16000	17500	20500	19200	15800
Antimony	NA	<60	<60	<60	<60	<6.1	<5.7	<5.6	<5.7	9.5	7.5	8.5	9.8	<7.1
Arsenic	<0.5	<10	32.0	29	<10	3.0	6.1	17.3	1.9	17.8	4.6	4.9	5.1	5.4
Barium	<10	<200	323	1160	<200	27.2	125	116	114	119	145	138	141	147
Beryllium	NA	<5	<5	5	<5	<0.51	<0.47	<0.46	<0.47	<0.61	0.72	0.83	0.72	<0.60
Cadmium	<0.1	<5	6.0	35	8.0	1.3	2.9	2.0	1.7	3.1	3.5	3.3	3.4	3.0
Calcium	NA	15800	32400	129000	24200	5270	6800	4560	8940	4820	9100	5850	6300	13100
Chromium	<0.5	13	57.0	169	33	17.4	46.0	17.5	15.8	22	24.4	25.3	25.4	24.8
Cobalt	NA	<50	<50	87	<50	10.9	12.4	10.5	8.7	13.7	12.9	15.5	13.9	12.9
Copper	NA	32.0	125	302	79	33.4	28.6	30.4	27.2	27.6	28.9	29.5	29.4	26.1
Iron	NA	3560	53500	152000	20000	20200	25900	20700	17900	25600	27500	29100	29200	26500
Lead	<0.5	18.1	250	273	75	5.8	29.4	11.6	5.4	96.6	10.4	26.1	8.5	8.8
Magnesium	NA	6220	17700	55500	9780	6350	5880	4320	5570	5210	6310	7240	7240	7840
Manganese	NA	69.0	1000	4210	437	497	518	458	423	610	549	460	264	524
Mercury	<0.02	<0.2	0.61	<0.2	<0.2	<0.11	<0.070	<0.090	0.11	0.16	0.06	0.43	0.13	<0.10
Nickel	NA	<40	120	242	<40	29.7	53.8	20.2	19.8	32.6	29.5	33.5	36.0	29.7
Potassium	NA	5100	10200	22750	12100	1780	2240	2100	1880	1850	2360	2280	2420	1610
Selenium	<0.1	<5	<5	<5	<5	<0.43	<0.48	<0.55	<0.44	<0.60	<0.61	<0.60	<0.61	<0.60
Silver	<0.5	<10	<10	<10	<10	1.7	2.6	2.3	1.4	<1.2	2.4	<1.2	<1.2	<1.2
Sodium	NA	14500	15200	26100	42400	533	646	507	418	808	726	906	1040	813
Thallium	NA	<10	<10	<10	<10	<0.86	<0.95	<1.1	<0.89	<1.2	<1.1	<1.2	<1.2	<1.2
Tin	NA	<100	<100	<100	<100	<10.2	<9.4	<9.3	<9.5	<12.2	<11.9	<11.8	<12.0	<11.9
Vanadium	NA	<50	117	258	55	35.6	55.2	43.0	34.1	53.8	57.5	57.2	55.9	54.0
Zinc	NA	1270	339	1320	549	42.1	73.9	45.5	32.7	51.7	81	62.9	61.6	65.6
Cyanide	NA	<10	<10	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.1	<1.1	<1.1	<1.1	<1.1

YARL Laboratory Database: Soil Confirmation Sampling

Tank and Washdown Pad Removal (Tasks 7-10)

Sampling Date: June 11 and 19, 1990

Units = mg/kg dry weight soil, and ug/L water

Method: Water sw 3510/6010, Soil 3550/sw7471

Parameter

[illegible]

YARL Laboratory Database: Soil Confirmation Sampling

Tank and Washdown Pad Removal (Tasks 7-10)

Sampling Date: June 11 and 19, 1990

Units = ug/kg soil, and ug/L water

Method: Water sw 3510/8140, Soil 3550/sw8140

Parameter:	Sample Number									
Organophosphorous Pesticides	ST-90	TR-1	T9-1	T9-2	T12-1	T12-2	T9-3	T9-4	WPS-1	WPS-2
Matrix	Sludge	Water	Water	Water	Water	Water	Soil	Soil	Soil	Soil
TEPP	NA	NA	<5.0	<5.0	<5.0	<5.0	<190	<190	<190	<200
Phorate	NA	24	<0.2	<0.2	<0.2	<0.2	44	<7.6	<7.0	<8.0
Disulfoton	82000	3700	0.5	1.8	1.8	<0.2	12000	<7.6	<7.0	<8.0
Methyl Parathion	34000	NA	<0.2	<0.2	<0.2	<0.2	<7.7	<7.6	<7.0	<8.0
Malathion	NA	NA	<0.2	<0.2	<0.2	<0.2	<7.7	<7.6	<7.0	<8.0
Dursban	NA	NA	<0.2	<0.2	<0.2	<0.2	<7.7	<7.6	<7.0	<8.0
Ethyl Parathion	NA	NA	<0.2	<0.2	<0.2	<0.2	<7.7	<7.6	<7.0	<8.0
Diazinon	NA	NA	<0.2	<0.2	<0.2	<0.2	<7.7	<7.6	<7.0	<8.0
Fenthion	NA	NA	<0.2	<0.2	<0.2	<0.2	<7.7	<7.6	<7.0	<8.0
Azinophos-methyl	NA	NA	<0.8	<0.8	<0.8	<0.8	<31	<30	<31	<32
Paraoxon	NA	NA	<2.0	<2.0	<2.0	<2.0	<77	<76	<77	<99

Parameter	WPS-3	WPS-4	DF-90-1	DF-90-2	DF-90-3	DF-90-4	DF-90-5	DF-90-6	DF-90-7
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
TEPP	<200	<200	<200	<190	<190	<200	<200	<210	<200
Phorate	<8.0	<8.0	<8.0	<7.6	<7.4	<7.9	<8.0	<8.3	<7.9
Disulfoton	<8.0	<8.0	<8.0	<7.6	<7.4	<7.9	<8.0	<8.3	<7.9
Methyl Parathion	<8.0	<8.0	<8.0	<7.6	<7.4	<7.9	<8.0	<8.3	<7.9
Malathion	<8.0	<8.0	<8.0	<7.6	<7.4	<7.9	<8.0	<8.3	<7.9
Dursban	<8.0	<8.0	<8.0	<7.6	<7.4	<7.9	<8.0	<8.3	<7.9
Ethyl Parathion	<8.0	<8.0	<8.0	<7.6	<7.4	<7.9	<8.0	<8.3	<7.9
Diazinon	<8.0	<8.0	<8.0	<7.6	<7.4	<7.9	<8.0	<8.3	<7.9
Fenthion	<8.0	<8.0	<8.0	<7.6	<7.4	<7.9	<8.0	<8.3	<7.9
Azinophos-methyl	<32	<31	<32	<31	<30	<31	<32	<33	<31
Paraoxon	<80	<79	<8.0	<76	<74	<79	<80	<83	<79

YARL Laboratory Database: Soil Confirmation Sampling

First Overexcavation: Tank and Washdown Pad (Task 19.1)

Sampling Date: October 23, 1990

Units = ug/kg soil, and ug/L water

Method: Water sw 3510/8140, Soil 3550/sw8140

Parameter:

Sample Number

Organophosphorous Pesticides	T19-1	T19-2	T19-3	T19-4	L2-1	L2-2	TP 101	TP 102	TP 103	TP 104	TP 105
Matrix	Water	Water	Water	Water	Soil	Soil	Soil	Soil	Soil	Soil	Soil
TEPP	<5.0	<5.0	<50.0	<5.0	<200	<200	<200	<200	<200	<200	<200
Phorate	<0.2	<0.2	<2.0	<0.2	<10	<10	<10	<10	<10	<10	<10
Disulfoton	<0.2	<0.2	<2.0	<0.2	<10	<10	<10	<10	<10	<10	<10
Methyl Parathion	<0.2	<0.2	<2.0	<0.2	<10	<10	<10	<10	<10	<10	<10
Malathion	<0.2	<0.2	<2.0	<0.2	<10	<10	<10	<10	<10	<10	<10
Dursban	<0.2	<0.2	<2.0	<0.2	<10	<10	<10	<10	<10	<10	<10
Ethyl Parathion	<1.0	<1.0	<10.0	<1.0	<10	<10	<10	<10	<10	<10	<10
Diazinon	<0.2	<0.2	<2.0	<0.2	<100	<100	<100	<100	<100	<100	<100
Fenthion	<1.0	<1.0	<10.0	<1.0	<40	<40	<40	<40	<40	<40	<40
Azinophos-methyl	<4.0	<4.0	<40.0	<4.0	<300	<300	<300	<300	<300	<300	<300
Paraoxon	<2.0	<2.0	<20.0	<2.0	<100	<100	<100	<100	<100	<100	<100

	TP 106	WP 101	WP 102
Matrix	Soil	Soil	Soil
TEPP	<200	<200	<200
Phorate	<10	<10	<10
Disulfoton	<10	<10	<10
Methyl Parathion	<10	<10	<10
Malathion	<10	<10	<10
Dursban	<10	<10	<10
Ethyl Parathion	<10	<10	<10
Diazinon	<100	<100	<100
Fenthion	<40	<40	<40
Azinophos-methyl	<300	<300	<300
Paraoxon	<100	<100	<100

YARL Laboratory Database: Soil Confirmation Sampling

First Overexcavation: Tank and Washdown Pad (Task 19.1)

Sampling Date: October 23, 1990

Units = ug/kg soil, and ug/L water

Method: Water sw 3510/8080, Soil 3550/sw8080

Parameter:	Sample Number											
Pesticides/PCBs	T19-1	T19-2	T19-3	T19-4	L2-1	L2-2	TP 101	TP 102	TP 103	TP 104	TP 105	TP 106
Matrix	Water	Water	Water	Water	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Alpha-BHC	<0.20	<0.20	<0.20	<0.20	<1	<1	<1	<1	<1	<1	<1	<1
Beta-BHC	<0.20	<0.20	<0.20	<0.20	<1	<1	<1	<1	<1	<1	<1	<1
Delta-BHC	<0.20	<0.20	<0.20	<0.20	<1	<1	<1	<1	<1	<1	<1	<1
Lindane	<0.20	<0.20	<0.20	<0.20	<1	<1	<1	<1	<1	<1	<1	<1
Heptachlor	<0.20	<0.20	<0.20	<0.20	<1	<1	<1	<1	<1	<1	<1	<1
Aldrin	<0.20	<0.20	<0.20	<0.20	<1	<1	<1	<1	<1	<1	<1	<1
Heptachlor Epoxide	<0.20	<0.20	<0.20	<0.20	<1	<1	<1	<1	<1	<1	<1	<1
Endosulfan I	0.33	<0.20	0.86	0.044	40	1300	470	770	76	240	128	344
Dieldrin	0.16	<0.20	<0.20	0.04	790	38	11	32	4.2	4.9	5.7	<1
4,4'-DDE	0.51	<0.20	0.32	0.24	2600	140	11	16	4.2	9.2	19	<1
Endrin	<0.20	<0.20	<0.20	<0.20	<1	<1	<1	<1	<1	<1	<1	<1
Endosulfan II	0.23	<0.20	0.58	0.057	<1	18	1.5	120	1.6	<1	25	5.5
4,4'-DDD	<0.20	<0.20	<0.20	0.056	<1	110	<1	17	3.4	5.0	13	<1
Endosulfan Sulfate	<0.20	<0.20	<0.20	<0.20	<1	<1	<1	<1	<1	<1	<1	<1
4,4'-DDT	<0.20	<0.20	<0.20	<0.20	12900	410	<1	<1	<1	<1	67	<1
Methoxychlor	<0.20	<0.20	<0.20	<0.20	<1	<1	7.1	<1	<1	<1	<1	<1
Endrin Aldehyde	<0.20	<0.20	<0.20	<0.20	<1	<1	<1	<1	<1	<1	<1	<1
Chlordane	<1.6	<1.6	<1.6	<1.6	<10	<10	<10	<10	<10	<10	<10	<10
Toxaphene	<10	<10	<10	<10	<40	<40	<40	<40	<40	<40	<40	<40
Arochlor-1016	<0.2	<0.2	<0.2	<0.2	<800	<800	<100	<100	<100	<100	<100	<100
Arochlor-1221	<0.2	<0.2	<0.2	<0.2	<800	<800	<100	<100	<100	<100	<100	<100
Arochlor-1232	<0.2	<0.2	<0.2	<0.2	<800	<800	<100	<100	<100	<100	<100	<100
Arochlor-1242	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arochlor-1248	<0.2	<0.2	<0.2	<0.2	<800	<800	<100	<100	<100	<100	<100	<100
Arochlor-1254	<0.2	<0.2	<0.2	<0.2	<800	<800	<100	<100	<100	<100	<100	<100

YARL Laboratory Database: Soil Confirmation Sampling

First Overexcavation: Tank and Washdown Pad (Task 19.1)

Sampling Date: October 23, 1990

Units = ug/kg soil, and ug/L water

Method: Water sw 3510/8080, Soil 3550/sw8080

Parameter:

Pesticides/PCBs	WP 101	WP 102
Matrix	Soil	Soil
Alpha-BHC	<1	<1
Beta-BHC	<1	<1
Delta-BHC	<1	<1
Lindane	<1	<1
Heptachlor	<1	<1
Aldrin	<1	<1
Heptachlor Epoxide	<1	<1
Endosulfan I	10	<1
Dieldrin	275	3.8
4,4'-DDE	1240	16
Endrin	6	<1
Endosulfan II	2.5	<1
4,4'-DDD	490	0.1
Endosulfan Sulfate	<1	<1
4,4'-DDT	2900	<1
Methoxychlor	<1	<1
Endrin Aldehyde	<1	<1
Chlordane	<10	<10
Toxaphene	<40	<40
Arochlor-1016	<100	<10
Arochlor-1221	<100	<10
Arochlor-1232	<100	<10
Arochlor-1242	NA	NA
Arochlor-1248	<100	<10
Arochlor-1254	<100	<10

YARL Laboratory Database: Soil Confirmation Sampling

First Overexcavation: Tank and Washdown Pad (Task 19.1)

Sampling Date: October 23, 1990

Units = mg/Kg dry weight soil, and ug/L water

Method: Water sw 3510/6010, Soil 3550/sw7471

Parameter: Sample Number

TCL metals	T19-3	T19-4	TP 101	TP 102	TP 103	TP 104	TP 105	TP 106	WP 101	WP 102
Matrix	Water	Water	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Aluminum	12900	5960	19900	22800	20400	22900	20700	22700	21800	23600
Antimony	<60	<60	<13.6	197	<13.4	<13.5	<12.9	<13.2	<13.0	<12.6
Arsenic	<10	<10	<4.5	<4.2	4.1	10.4	8.8	<4.4	20.8	5.6
Barium	<200	<200	139	146	141	167	140	144	168	169
Beryllium	<5.0	<5.0	<1.1	<1.0	<1.1	<1.1	<1.1	<1.1	<1.1	<1.0
Cadmium	<5.0	<5.0	<1.1	<1.0	<1.1	<1.1	<1.1	<1.1	<1.1	<1.0
Calcium	16800	<5000	6260	5910	7770	6980	8910	6710	6860	6130
Chromium	15.1	<10	25.6	28.6	32.0	33.3	26.0	26.9	21.6	25.7
Cobalt	<50	<50	13.9	14.7	14.0	15.1	14.2	14.4	12.7	14.2
Copper	63.0	30.7	26.5	27.7	27.4	27.4	26.2	28.4	26.7	26.9
Iron	13300	6020	29500	31900	31300	33700	30400	32000	30600	32300
Lead	22.0	20.6	7.5	5.7	5.7	6.4	7.0	6.5	29.6	27.4
Magnesium	8890	<5000	7100	6410	9960	8620	8420	8700	5810	6020
Manganese	273	118	482	400	584	63.4	637	834	587	802
Mercury	<0.2	<0.2	<0.26	<0.30	<0.23	<0.29	<0.28	<0.26	<0.22	<0.28
Nickel	<40	<40	30.0	26.7	47.1	42.2	33.1	40.0	23.2	24.8
Potassium	5600	14100	2620	2610	2250	2600	2350	2740	2810	2150
Selenium	<5.0	<5.0	<1.1	<1.0	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Silver	<10	<10	<2.3	<2.1	<2.2	<2.2	<2.2	<2.2	<2.2	<2.1
Sodium	12500	<5000	898	226	1060	1170	961	1060	738	797
Thallium	<10	<10	<2.2	<2.1	<2.2	<2.2	<2.2	<2.2	<2.2	<2.1
Tin	<30	<30	<22.6	<21.1	<22.3	<22.5	<21.5	<22.1	<21.6	21.0
Vanadium	56.3	<50	63.8	69.9	65.8	73.1	65.7	67.4	63.2	66.3
Zinc	144	175	62.7	74.8	63.8	67.2	61.0	62.6	72.4	75.2
Cyanide	<10	<10	<1.1	<1.2	<1.2	<1.1	<1.2	<1.2	<1.2	<1.1

YARL Laboratory Data

Second Overexcavation of Washdown Pad (Task 19.2)

Sampling Date: June 11, 1991

Units = ug/kg soil, and ug/L water

Method: Water sw 3510/8080, Soil 3550/sw8080

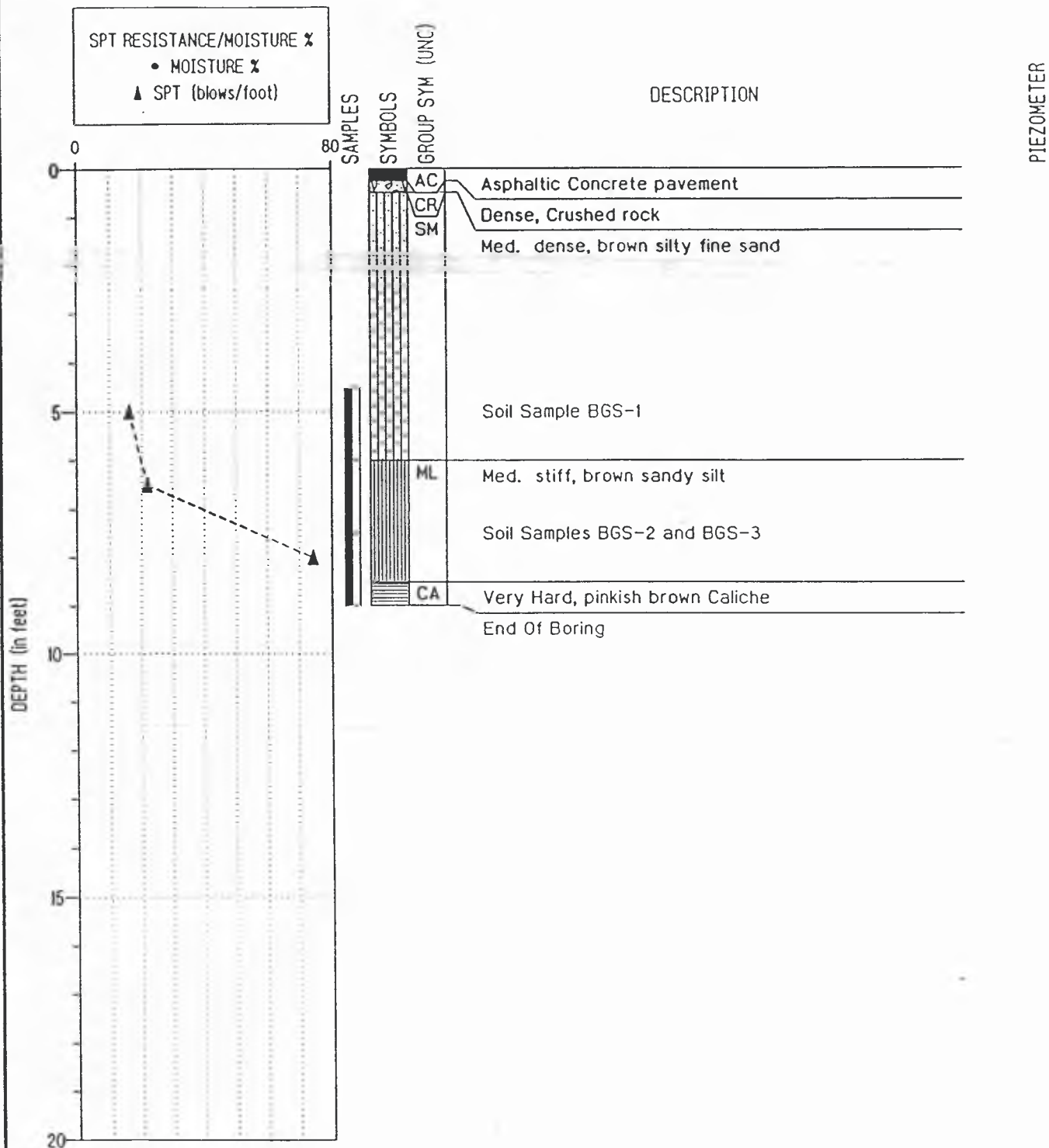
Parameter:

Sample Number

Pesticides/PCBs	A	B	C	D	Rinsate	Wash water
Matrix	Soil	Soil	Soil	Soil	Water	Water
Alpha-BHC	<0.2	<0.2	<0.2	<0.2	<0.02	<0.02
Beta-BHC	<0.2	<0.2	<0.2	<0.2	<0.02	<0.02
Delta-BHC	<0.2	<0.2	<0.2	<0.2	<0.02	<0.02
Lindane	<0.2	<0.2	<0.2	<0.2	<0.02	<0.02
Heptachlor	<0.2	<0.2	<0.2	<0.2	<0.02	<0.02
Aldrin	<0.2	<0.2	<0.2	<0.2	<0.02	<0.02
Heptachlor Epoxide	<0.2	<0.2	<0.2	<0.2	<0.02	<0.02
Endosulfan I	<0.2	<0.2	<0.2	<0.2	0.02	<0.02
Dieldrin	<0.2	<0.2	<0.2	42	<0.02	<0.02
4,4'-DDE	<0.2	<0.2	0.5	<0.2	<0.02	<0.02
Endrin	<0.2	<0.2	<0.2	<0.2	<0.02	<0.02
Endosulfan II	<0.2	<0.2	<0.2	<0.2	0.04	<0.02
4,4'DDD	0.4	<0.2	<0.2	0.9	<0.02	<0.02
Endosulfan Sulfate	<0.2	<0.2	<0.2	0.4	<0.02	<0.02
4,4'-DDT	1.1	<0.2	0.8	5.2	0.02	0.06
Methoxychlor	<0.2	<0.2	<0.2	<0.2	<0.02	<0.02
Endrin Aldehyde	<0.2	<0.2	<0.2	2	<0.02	<0.02
Chlordane	<1.3	<1.3	<1.3	<1.3	<0.16	<0.16
Toxaphene	<8.3	<8.3	<8.3	<8.3	<1.0	<1.0

**APPENDIX B - DRAINFIELD AND BACKGROUND
SAMPLING LOGS**

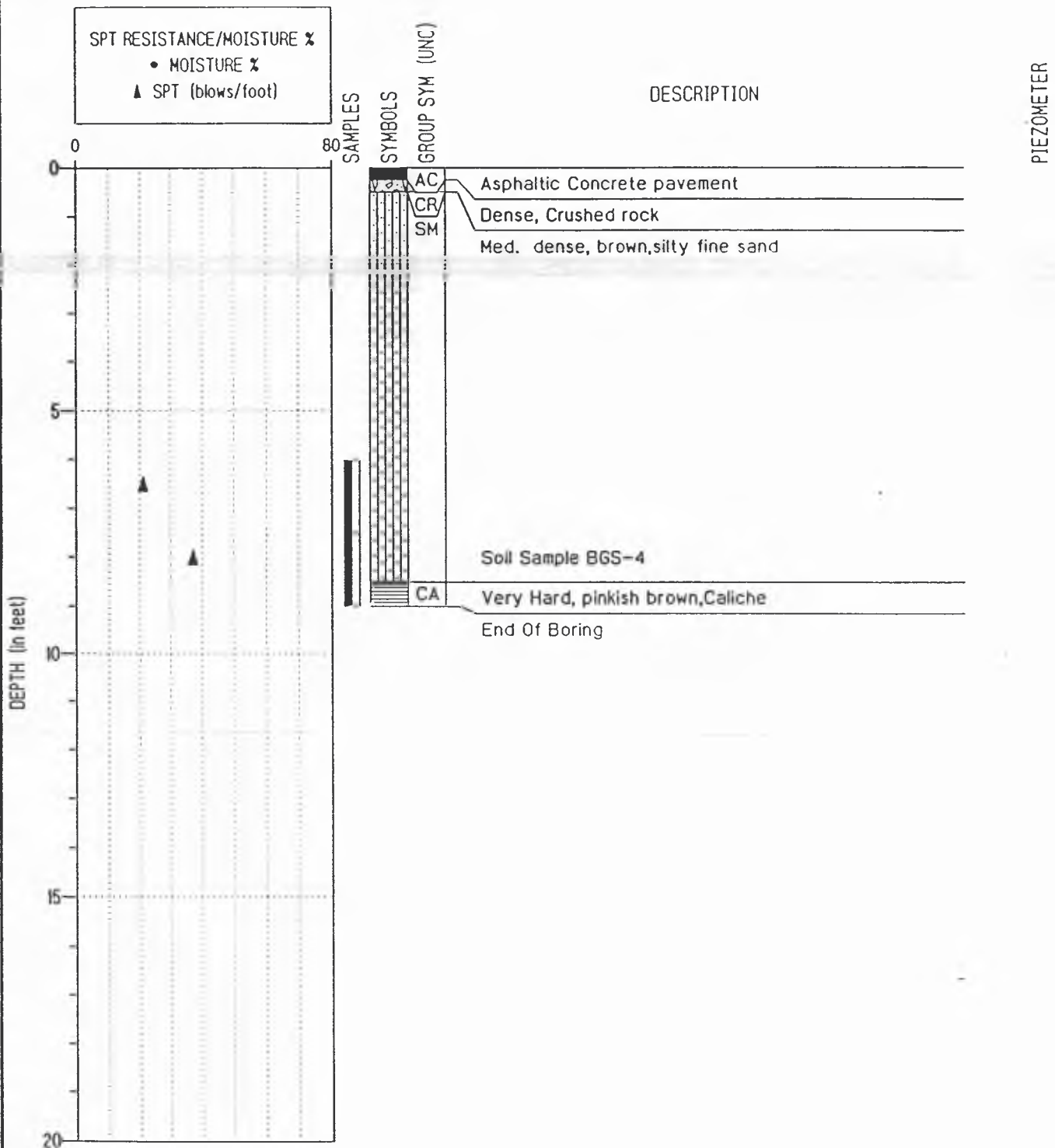
HONG WEST & ASSOCIATES BORING LOG



PROJECT NAME: YARL
LOCATION: 3706 W. Nob Hill Rd., Yakima, WA
PROJECT NUMBER: 90042
LOGGED BY: Steven Greene

BORING BGS-1
DATE DRILLED: 6-19-90
SURFACE ELEVATION: ft.
TOTAL DEPTH: 9.0 ft.

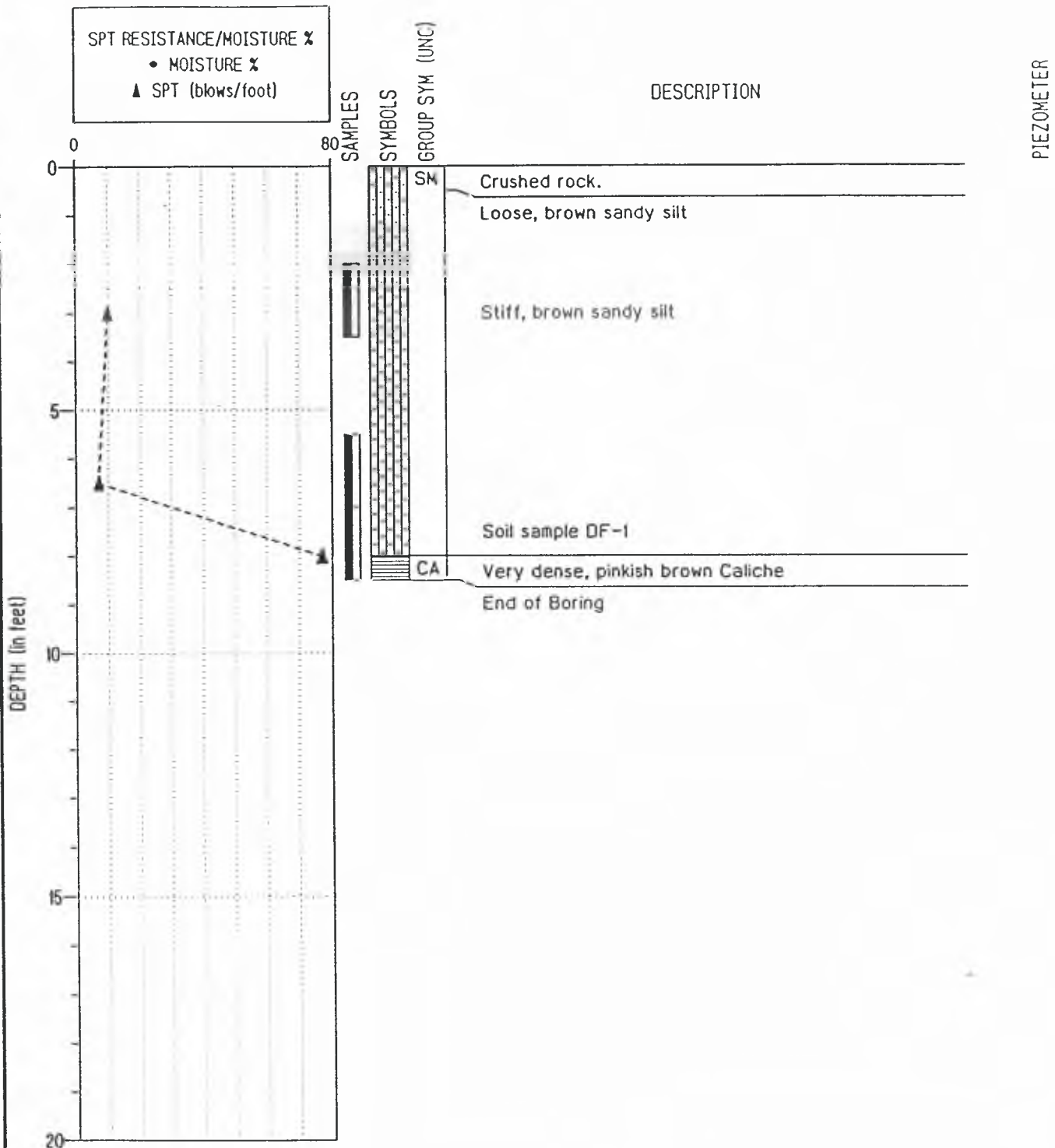
HONG WEST & ASSOCIATES BORING LOG



PROJECT NAME: YARL
 LOCATION: 3706 W. Nob Hill Rd., Yakima, WA
 PROJECT NUMBER: 90042
 LOGGED BY: Steven Greene

BORING BGS-4
 DATE DRILLED: 6-19-90
 SURFACE ELEVATION: ft.
 TOTAL DEPTH: 9.0 ft.

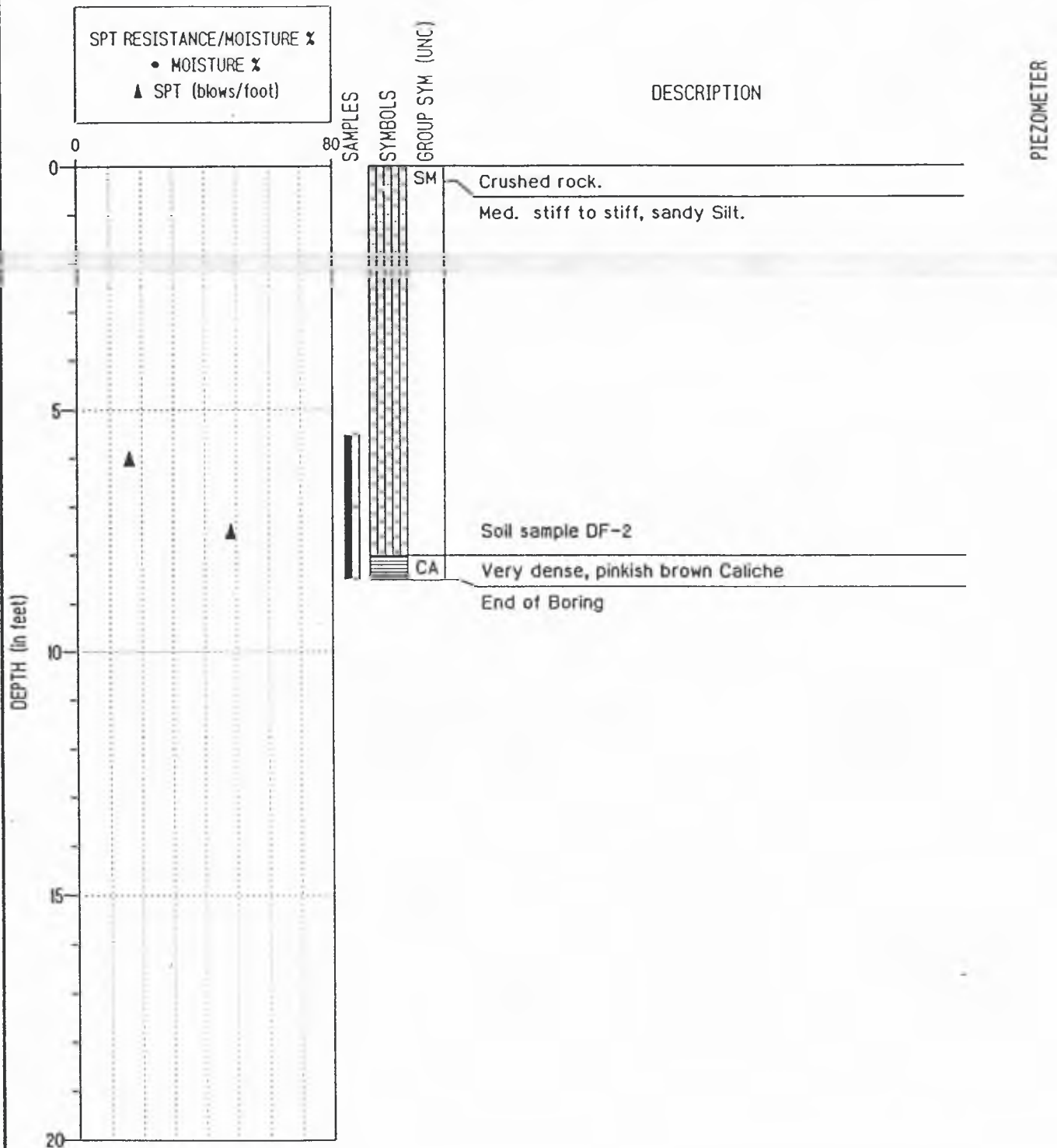
HONG WEST & ASSOCIATES BORING LOG



PROJECT NAME: YARL
 LOCATION: 3706 W. Nob Hill Rd., Yakima, WA
 PROJECT NUMBER: 90042
 LOGGED BY: Steven Greene

BORING DF-1
 DATE DRILLED: 6-19-90
 SURFACE ELEVATION: ft.
 TOTAL DEPTH: 8.5 ft.

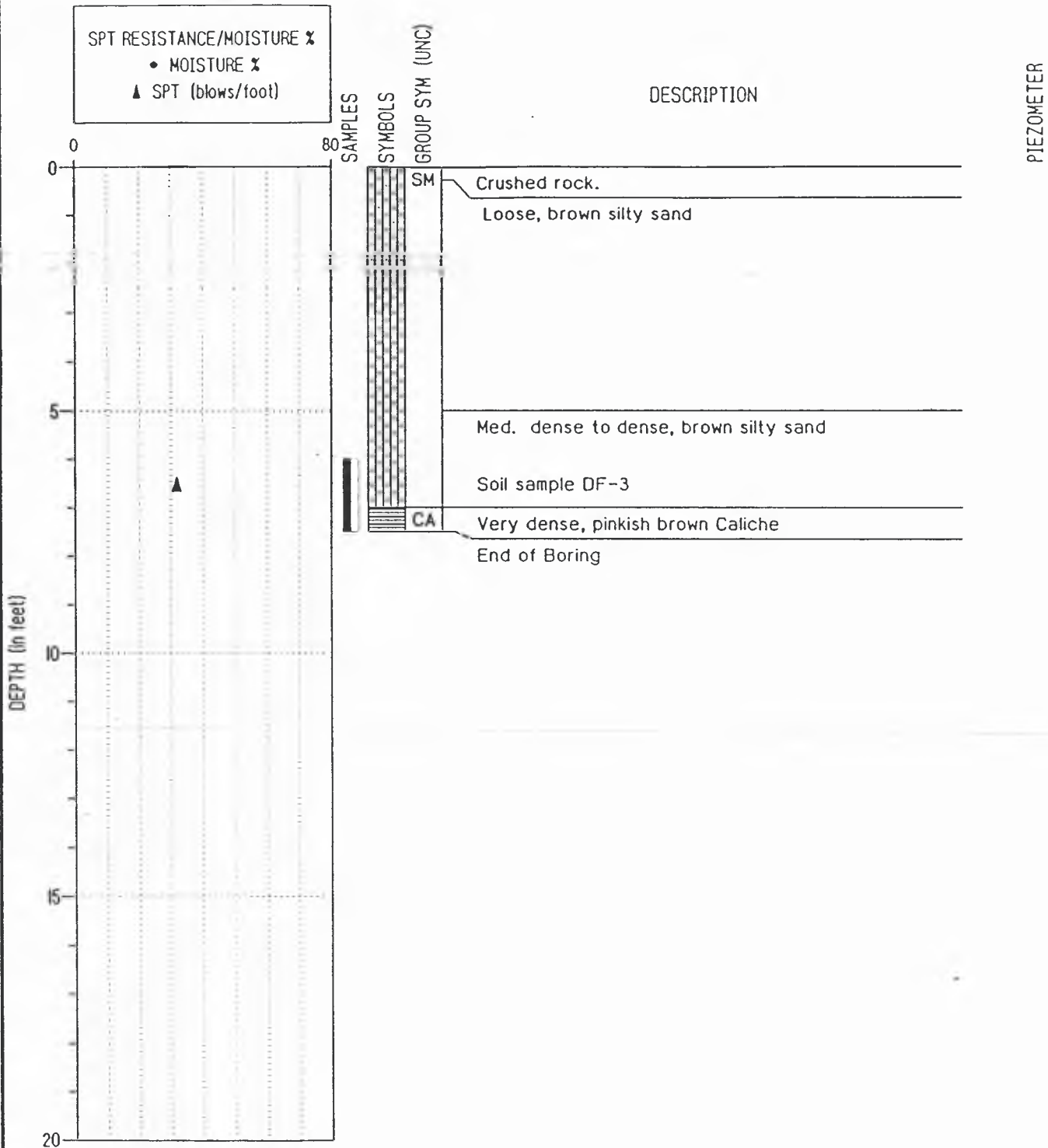
HONG WEST & ASSOCIATES BORING LOG



PROJECT NAME: YARL
 LOCATION: 3706 W. Nob Hill Rd., Yakima, WA
 PROJECT NUMBER: 90042
 LOGGED BY: Steven Greene

BORING DF-2
 DATE DRILLED: 6-19-90
 SURFACE ELEVATION: 1t.
 TOTAL DEPTH: 8.5 ft.

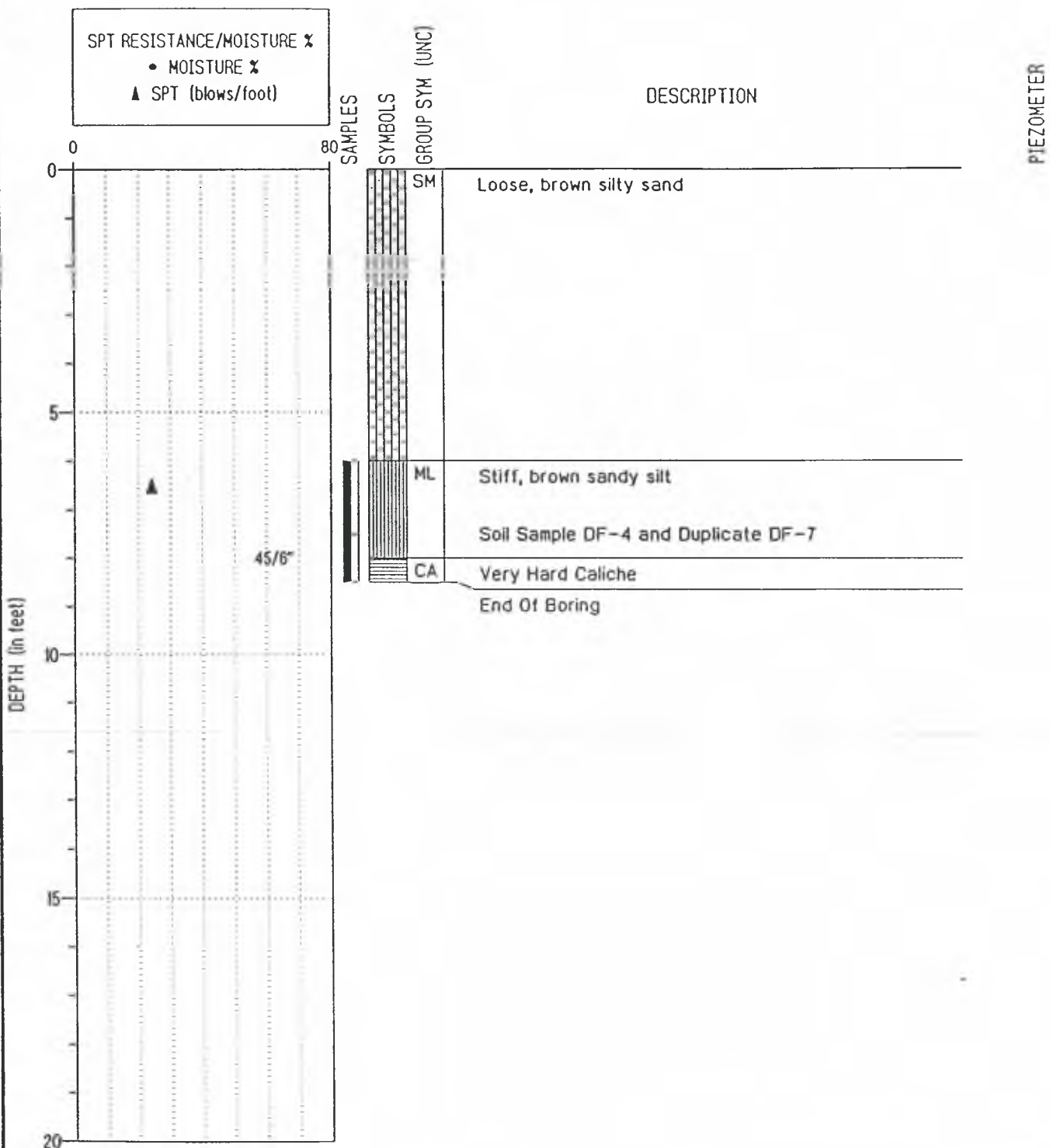
HONG WEST & ASSOCIATES BORING LOG



PROJECT NAME: YARL
 LOCATION: 3706 W. Nob Hill Rd., Yakima, WA
 PROJECT NUMBER: 90042
 LOGGED BY: Steven Greene

BORING DF-3
 DATE DRILLED: 6-19-90
 SURFACE ELEVATION: ft.
 TOTAL DEPTH: 7.5 ft.

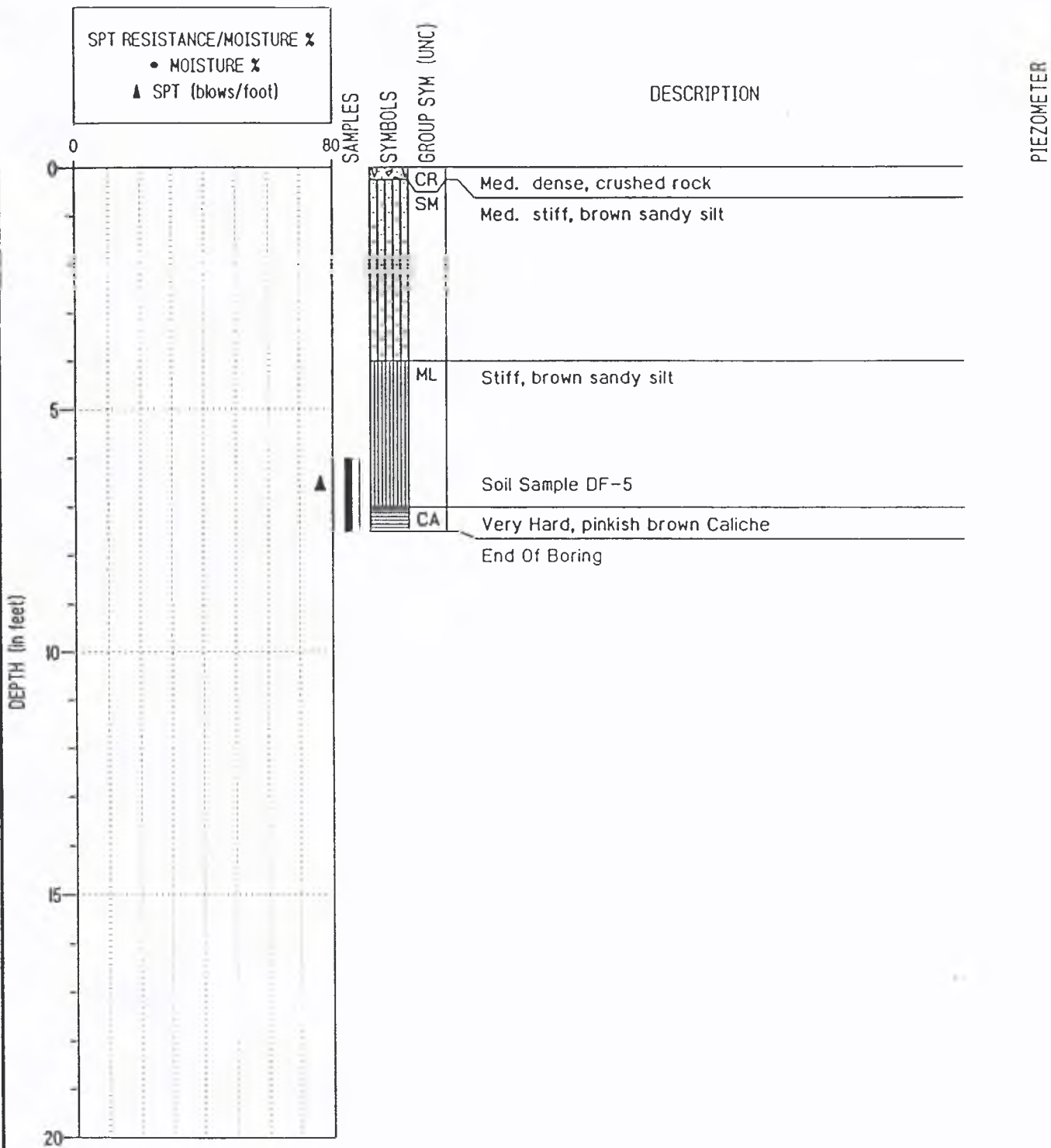
HONG WEST & ASSOCIATES BORING LOG



PROJECT NAME: YARL
LOCATION: 3706 W. Nob Hill Rd., Yakima, WA
PROJECT NUMBER: 90042
LOGGED BY: Steven Greene

BORING DF-4
DATE DRILLED: 6-19-90
SURFACE ELEVATION: 11.
TOTAL DEPTH: 8.5 ft.

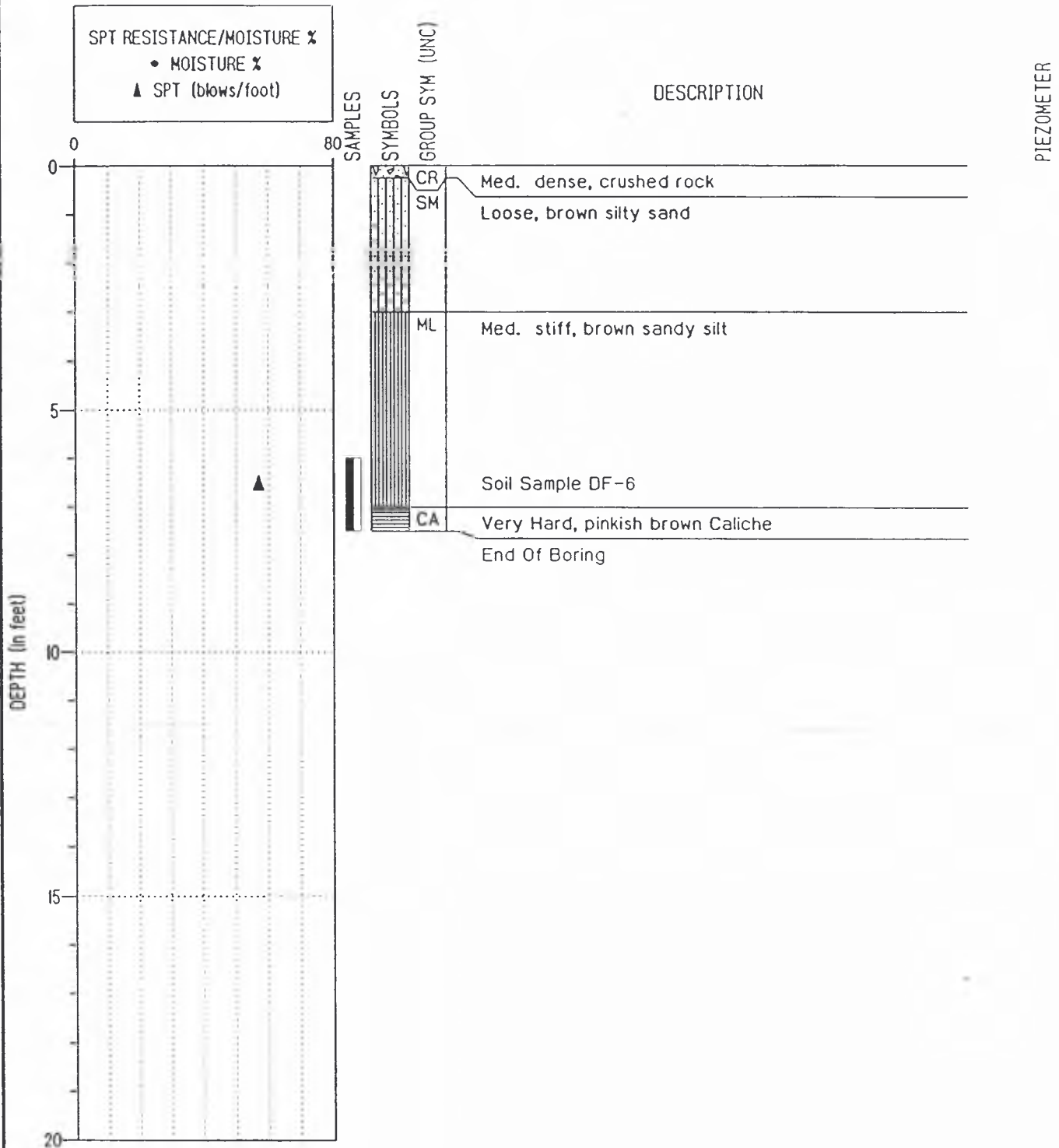
HONG WEST & ASSOCIATES BORING LOG



PROJECT NAME: YARL
 LOCATION: 3706 W. Nob Hill Rd., Yakima, WA
 PROJECT NUMBER: 90042
 LOGGED BY: Steven Greene

BORING DF-5
 DATE DRILLED: 6-19-90
 SURFACE ELEVATION: ft.
 TOTAL DEPTH: 7.5 ft.

HONG WEST & ASSOCIATES BORING LOG



PROJECT NAME: YARL
 LOCATION: 3706 W. Nob Hill Rd., Yakima, WA
 PROJECT NUMBER: 90042
 LOGGED BY: Steven Greene

BORING DF-6
 DATE DRILLED: 6-19-90
 SURFACE ELEVATION: ft.
 TOTAL DEPTH: 7.5 ft.

APPENDIX C - QA/QC DATA

QUALITY ASSURANCE CHECK SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): BIOSPHERICS, INC.Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042 TASKSite Location: YAKIMA, WASampling Date(s): June 11, 1990Submittal Date: June 11, 1990

Data Analysis Request: _____

Sample Matrix/Type: water

Analyses:

/X/ Metals	// ENAs	// Petroleum	// Other _____
// Volatiles	// PAH/PN	// Phenolics	// _____
	/X/ Pesticides- Herbicides	// EP TOX	// _____

QA CHECKLISTOK or NO with COMMENTS

Analysis Matches Request?

NO Shipment Integrity? no chain of custody seal, no comment on temperatureAnalysis within Time Limits? yes. OKNO Methods Acceptable?:

Calibration/Std's not provided

Blanks not provided

Duplicates not provided

Dilutions none necessary or information not noted, surrogate diluted

Spikes not provided out bec. of high, non target compounds
background

Comments: _____

Analysis Distribution: _____

Note: NP = Not Performed; NA = Not Applicable; please list comments.

QA/QC CLP PROCESS SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): Biospherics, INC.Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042 - 8Site Location: YAKIMA, WASampling Date(s): 6-11-90Submittal Date: 6-11-90

Date Analysis Rcv'd: _____

Sample Matrix/Type: _____

Analyses:

<input checked="" type="checkbox"/> Metals	<input type="checkbox"/> ENAS	<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other
<input type="checkbox"/> Volatiles	<input type="checkbox"/> PAH/PN	<input type="checkbox"/> Phenolics	
	<input checked="" type="checkbox"/> Pesticides- Herbicides	<input type="checkbox"/> EP TOX	

CLP CHECKLIST

Analysis Matches Request? _____

Shipment Integrity? ND see Level 1Analysis in Time Limits? yesLab Biospherics

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Quarterly Verification	<u>NA</u>		<u>XB</u>	
Instrument Calibration	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>not provided</u>
AA/ICP Stds	<u>✓</u>	<u>NO</u>	<u>XB</u>	"
Blanks	<u>✓</u>	<u>NO</u>	<u>XB</u>	"
ICP Interference	<u>✓</u>	<u>NO</u>	<u>XB</u>	"
Spike Recovery	<u>✓</u>	<u>NO</u>	<u>XB</u>	"
Surrogate Recovery	<u>✓</u>	<u>NO</u>	<u>XB</u>	"
Duplicates (Lab)	<u>✓</u>	<u>NO</u>	<u>XB</u>	"
Lab Controls	<u>NA</u>		<u>XB</u>	
Serial Dilutions	<u>NA</u>		<u>XB</u>	

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Other: Detection Limits				
Metals (6010)	✓	NO	XB	method detection limit
Mercury (7470)	✓	NO	XB	"
Pesticides / PCBs (8080)	✓	NO	XB	Method detection limit
Organophosphorous pesticides (8140)	✓	✓	XB	
VOA (8240)				
Herbicides (8150)	✓	NO	XB	silverx DL=1, project plan=C ug/L.
<u>Field</u>				
Methods Blanks	✓	NO	XB	
Travel Blanks	✓	NA/NO	XB	if ^{required} only done for VOA's OK. none done on this round
Splits	✓	NO NA	XB	
Duplicates	✓	NO	XB	

Comments: _____

Analysis Distribution: _____

LAB NAME: BIOSPHERICS INCORPORATED

DATE COLLECTED: June 11, 1990

DATE RECEIVED: June 13, 1990

MATRIX: Water

CASE: CS2(06/13)

Analytical Methodology/Sample Chronicle

Parameter	Method	Date Extracted	Date Analyzed
Metals-EP Toxicity	EPA 1310/6010 7470	06/21/90 06/26/90	07/03/90 06/26/90
Pesticides-EP Toxicity	EPA 8080	06/22/90	06/29-30/90
Herbicides-EP Toxicity	EPA 8150	07/03/90	07/06/90
Organophosphorus Pesticides-EP Toxicity	EPA 8140	06/25/90	06/28/90

QA Summary

Metals EP Toxicity

The process blank and laboratory control sample results were within acceptable limits.

Herbicides-EP Toxicity

The process blank and surrogate recovery results were within acceptable limits.

Pesticides-EP Toxicity

The process blank result was within acceptable limits. The surrogate was diluted out because of high background of non-target compounds. ✓

Organophosphorus Pesticides-EP Toxicity

The process blank result was within acceptable limits. The surrogate was diluted out because of high concentration of target compounds. ✓

TASK 8

Project: YARL		Site: Tank Removal						
Client: Hong West Assoc		Phone: 206 774 0106						
Address: PO Box 596		Lynnwood, WA 98046						
Sampler's Name/Firm: Doug Geller / HWA								
Phone: Same		Sampler's Signature: [Signature]						
Sample Number	Date	Time	Matrix	No. of Containers	Preservative Used	Analyses Required	Remarks or Sample Location	
90042-TR-1			H2O	4		EP Toxicity Metals (8) EP Toxicity Pesticides EP Tox Herbicides EP Tox Organophos. Insect.	Tank Rinse	
Relinquished by: (Signature) [Signature]					Date/Time	Received by: (Signature)		
Relinquished by: (Signature) [Signature]					Date/Time	Received for Laboratory by: (Signature) [Signature]		
Relinquished by: (Signature) [Signature]					Date/Time	Chain of Custody Seal: (Circle) Intact Broken Absent		
					Date/Time	Shipping Carrier:		
					Date/Time	Shipping Ticket Number:		
					Lab Remarks			

White-Return to Client

Yellow-Retain by Lab (Project File)

Pink-Retain by Lab (Client Services)

Gold-Retain by Sampler

QUALITY ASSURANCE CHECK SHEET

Level 1

Date: 9-30-91

QA Evaluator: Laurie Benton

Lab(s): BIOSPHERICS, INC.

Project Name: YAKIMA AGRICULTURAL RESEARCH LABORATORY

Project No: 90042

Task 9

Site Location: YAKIMA, WA

Background

Sampling Date(s): June 19, 1990

Submittal Date: June 20, 1990

Date Analysis Rec'd: _____

Sample Matrix/Type: Soil

Analyses:

/X/ Metals	/X/ BNAs	// Petroleum	/X/ Other <u>Cyanide</u>
/X/ Volatiles	// PAH/PN	// Phenolics	//
	/X/ Pesticides-Herbicides	// EP TOX	//

QA CHECKLIST

OK or NO with COMMENTS

Analysis Matches Request? OK NO X BNA compounds analyzed do not match project plan + some VOA + BNA compounds missing.

Shipment Integrity? NO no chain of custody seal. Samples arrived at Lab warmer than 4°C.

Analysis within Time Limits? NO BNA's extracted after holding time.

Methods Acceptable?:

NO Calibration/Stds not provided
 Blanks not provided
 Duplicates not provided
 Dilutions not provided
 Spikes provided only when results out side Lab QC limits for metals.

Comments: VOA compounds listed in project plan, but not analyzed:-

trichlorofluoromethane + 2-chloroethyl vinyl ether

BNA's: p-chloroaniline, Indeno (1,2-c,d) pyrene, m-, o-, p-nitroaniline, n-nitrosodi-n-propylamine, ortho-, para- cresol.

Analysis Distribution: _____

Note: NP = Not Performed; NA = Not Applicable; please list comments.

CAS-QA.403 LK

QA/QC CLP PROCESS SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): Biospherics, Inc.Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042Site Location: YAKIMA, WASampling Date(s): June 19, 1990Submittal Date: June 20, 1990

Date Analysis Rcv'd: _____

Sample Matrix/Type: Soil

Analyses:

/x/ Metals	/x/ EAS	// Petroleum	/x/ Other <u>Cyanide</u>
/x/ Volatiles	// PAH/PN	// Phenolics	//
	/x/ Pesticides- Herbicides	// EP TOX	//

CLP CHECKLISTAnalysis Matches Request? ~~YES~~ NO.Shipment Integrity? NO. see level 1Analysis in Time Limits? NO, see level 1Lab Biospherics, Inc.

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Quarterly Verification	<u>NA</u>		<u>XB</u>	<u>x</u>
Instrument Calibration	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>not provided</u>
AA/ICP Stds	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>"</u>
Blanks	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>"</u>
ICP Interference	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>"</u>
Spike Recovery	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>only provided when outside LK or limits</u>
Surrogate Recovery	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>not provided</u>
Duplicates (Lab)	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>"</u>
Lab Controls	<u>NA</u>		<u>XB</u>	
Serial Dilutions	<u>NA</u>		<u>XB</u>	<u>not performed or not reported</u>

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Other: Detection Limits				
Metals (6010)	✓	NO	XB	some above method det. limit
Mercury (1470)	✓	NO	XB	some above method det limit
Pesticides / PCBs (8080), ^{cyanoide} (8140)	✓	✓	XB	
Organophosphorous pesticides (8140)	✓	NO	XB	some above method det. limit
VOA (8240)	✓	NO	XB	some above method det limit
Herbicides (8150)	NA			
BNA's	✓	NO	XB	some above method det limit
Field				
Methods Blanks	✓	NO	XB	unless rinsate + wash water qualify.
Travel Blanks	✓	NO	XB	none done, not even for VOA's
Splits	✓	NA ⁸⁸	XB	
Duplicates	✓	NO	XB	

Comments: 2 QA/QC duplicate required, unless that refers to the other task 9 samples that are not background.

Analysis Distribution: _____

LAB NAME: BIOSPHERICS INCORPORATED

CLIENT: Hong West

DATE COLLECTED: June 19, 1990

DATE RECEIVED: June 20, 1990

MATRIX: Soil

CASE: CS6(06/22)

Analytical Methodology/Sample Chronicle

<u>Parameter</u>	<u>Method</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
Metals	EPA 6010 7470	06/22/90 06/26/90	06/28-07/02/90 06/26/90
Pesticides	EPA 8080	06/27/90	06/28/90
Organophosphorus Pesticides	EPA 8140	06/25/90	06/26/90
Volatile Organics	EPA 8240		06/25/90
Semi-volatile Organics	EPA 8270	06/28/90	07/02/90
Cyanide	EPA 9010	06/25/90	06/28/90

QA Summary

*Metals, Cyanide

The process blank, replicate, matrix spike and laboratory control sample results were within acceptable limits. The matrix spike results for 90042-BGS-4 were within acceptable range for all metals except antimony (19%) and copper (225%).

Pesticides and Organophosphorus Pesticides, Semi-volatile organics

The process blank and surrogate recovery results were within acceptable limits.

Volatile Organics

The process blank, surrogate, matrix spike and matrix spike duplicate results were within acceptable limits.

Gcll-Retain by Sampler

QUALITY ASSURANCE CHECK SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): BIOSPHERICS, INC.Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042 Task 4Site Location: YAKIMA, WASampling Date(s): June 11, 1990Submittal Date: June 11, 1991

Date Analysis Rec'd: _____

Sample Matrix/Type: Soil

Analyses:

/X/ Metals	/X/ ENAs	// Petroleum	/X/ Other <u>Cyanide</u>
/X/ Volatiles	// PAH/PN	// Phenolics	// _____
	/X/ Pesticides- Herbicides	// EP TOX	// _____

QA CHECKLIST

OK or NO with COMMENTS

Analysis Matches Request? ^{NO} OK for 90042 TPS-3 to -8, and 90042-T9-3, but
all reports for TPS-1, TPS-2 are missing.
Shipment Integrity? ^{NO} NO no chain of custody seal some VOC + BNA compounds requested were not analyzed.

Analysis within Time Limits? NO BNA's not extracted within 7 day extraction
holding time.

Methods Acceptable?: OK

Calibration/Std's not provided

Blanks see comments

Duplicates "

Dilutions "

Spikes "

Comments: This information is only provided when preformed
or when lab results are outside lab QA/QC limits.

VOA's + BNA's listed in project plan but not analyzed for are (VOA's):

2-chloroethyl vinyl ether + trichlorofluoromethane, (BNA's) p-chloroaniline, Indeno(1,2-cd)
pyrene, + ortho-, para- cresol, m-, o-, p- nitroaniline, n-nitrosodi-n-propylamine

Analysis Distribution: _____

Note: NP = Not Performed; NA = Not Applicable; please list comments.

CAS-QA.403 LK

QA/QC CLP PROCESS SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): Biospherics, INC.Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042Site Location: YAKIMA, WASampling Date(s): June 11, 1990Submittal Date: June 11, 1991

Date Analysis Rcv'd: _____

Sample Matrix/Type: Soil

Analyses:

<input checked="" type="checkbox"/> Metals	<input checked="" type="checkbox"/> ENAS	//	Petroleum	<input checked="" type="checkbox"/> Other <u>Cysuide</u>
<input checked="" type="checkbox"/> Volatiles	//	PAH/PN	//	Phenolics
	<input checked="" type="checkbox"/> Pesticides- Herbicides	//	EP TOX	//

CLP CHECKLISTAnalysis Matches Request? NO/OK, but some results missing Shipment Integrity? NO, see level 1Analysis in Time Limits? NO, see level 1 Lab Biospherics, Inc.

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Quarterly Verification	<u>NA</u>		<u>XB</u>	
Instrument Calibration	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>not provided</u>
AA/ICP Stds	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>"</u>
Blanks	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>see level 1</u>
ICP Interference	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>"</u>
Spike Recovery	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>"</u>
Surrogate Recovery	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>"</u>
Duplicates (Lab)	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>"</u>
Lab Controls	<u>NA</u>		<u>XB</u>	<u>"</u>
Serial Dilutions	<u>NA</u>		<u>XB</u>	<u>none performed or not reported</u>

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Other: Detection Limits				PQL over method detection limit
Metals (6010)	✓	NO	LB	some analyses too high PQL for
Mercury (1470)	✓	NO	LB	"
Pesticides/PCBs (8080)	✓	NO	LB	"
Organophosphorous pesticides (8140)	✓	✓	LB	
VOA (8240)	✓	NO	LB	Some analyses PQL over method det. limit.
Herbicides (8150)	—	—	—	
BNA's (8270)	✓	NO	LB	"
Cyanide (9010)	✓	NO	LB	"
Field				
Methods Blanks	✓	NO	LB	unless rinse + wash H ₂ O quality
Travel Blanks	✓	NO	LB	
Splits	✓	NA	LB	
Duplicates	✓	NO	LB	no QA/QC duplicate

Comments: _____

Analysis Distribution: _____

LAB NAME: BIOSPHERICS INCORPORATED

CLIENT: Hong West

DATE COLLECTED: June 11, 1990

DATE RECEIVED: June 13, 1990

MATRIX: Soil

CASE: CS4(06/13)

Analytical Methodology/Sample Chronicle

<u>Parameter</u>	<u>Method</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
Metals	EPA 6010 7471	06/13/90 06/14/90	06/18-19/90 06/14/90
Pesticides	EPA 8080	06/14/90	06/16-20/90
Organophosphorus Pesticides	EPA 8140	06/18/90	06/19-20/90
Volatile Organics	EPA 8240		06/13/90
Semi-volatile Organics	EPA 8270	06/20/90	06/21/90
Cyanide	EPA 9010	06/19/90	06/20/90

QA Summary

*Metals, Cyanide

OK The process blank, replicate, matrix spike and laboratory control sample results were within acceptable limits.

*Pesticides

The process blank result was within acceptable limits. The surrogate was diluted out for samples 90042-TPS-2, 90042-TPS-4 and 90042-TPS-7.

*Volatile Organics

OK The process blank, surrogate, matrix spike and matrix spike duplicate results were within acceptable limits.

*Organophosphorus Pesticides

The process blank result was within acceptable limits. The surrogate was diluted out for sample 90042-T9-3.

Semi-volatile Organics

The process blank and surrogate recovery results were within acceptable limits. A matrix spike/matrix spike duplicate was performed on 90042-WPS-2. The percent recovery was within acceptable limits for the base/neutral/acids. The relative percent difference for pentachlorophenol was 128 %, outside the acceptable quality control limits of 17-109%.

5 - DAY TA

Gold-Retain by Sampler

QUALITY ASSURANCE CHECK SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): BIOSPHERICS, INC.Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042 TASK 9Site Location: YAKIMA, WASampling Date(s): June 11, 1990Submittal Date: June 11, 1990

Date Analysis Received: _____

Sample Matrix/Type: Water

Analyses:

<input checked="" type="checkbox"/> Metals	<input checked="" type="checkbox"/> BAs	// Petroleum	<input checked="" type="checkbox"/> Other <u>Cyanide</u>
<input checked="" type="checkbox"/> Volatiles	// PAH/PN	// Phenolics	// _____
	<input checked="" type="checkbox"/> Pesticides- Herbicides	// EP TOX	// _____

QA CHECKLIST

OK or NO with COMMENTS

NO Analysis Matches Request? Method 8140 performed by lab on 2 extra bottles label #'s 90042-TA-1, -2 even though not requested on chain of custody sheet

NO Shipment Integrity? no chain of custody seal

OK Analysis within Time Limits?

OK Methods Acceptable?: EPA methods OK, some requested VOA + BNA compounds not analyzed, see comments.

Calibration/Std's not provided

Blanks not provided

Duplicates not provided

Dilutions not provided

Spikes not provided

Comments: Compounds not analyzed VOA's: Trichlorofluoromethane, + 2-Chloroethyl vinyl ether. BNA's p-chloroaniline, indeno(1,2-c,d)pyrene, ortho-cresol, para-cresol, N-nitrosodi-N-propylamine, m-, o-, p-nitroaniline

Analysis Distribution: _____

Note: NP = Not Performed; NA = Not Applicable; please list comments.

CAS-QA.403 IK

QA/QC CLP PROCESS SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): Biospherics, Inc.Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042Site Location: YAKIMA, WASampling Date(s): 6-11-90Submittal Date: 6-11-90

Date Analysis Rcv'd: _____

Sample Matrix/Type: water

Analyses:

/x/ Metals	/x/ ENAs	// Petroleum	/x/ Other <u>Cygnide</u>
/x/ Volatiles	// PAH/PN	// Phenolics	//
	/x/ Pesticides- Herbicides	// EP TOX	//

CLP CHECKLISTAnalysis Matches Request? NO, see level I Shipment Integrity? NO, see level IAnalysis in Time Limits? OK Lab Biospherics, Inc.

Laboratory	Reviewed	Acceptable	Initials	Comment
Quarterly Verification	<u>NA</u>		<u>XB</u>	
Instrument Calibration	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>not provided</u>
AA/ICP Stds	<u>✓</u>	<u>NO</u>	<u>XB</u>	"
Blanks	<u>✓</u>	<u>NO</u>	<u>XB</u>	"
ICP Interference	<u>✓</u>	<u>NO</u>	<u>XB</u>	"
Spike Recovery	<u>✓</u>	<u>NO</u>	<u>XB</u>	"
Surrogate Recovery	<u>✓</u>	<u>NO</u>	<u>XB</u>	"
Duplicates (Lab)	<u>✓</u>	<u>NO</u>	<u>XB</u>	"
Lab Controls	<u>NA</u>	<u>N</u>	<u>XB</u>	<u>—</u>
Serial Dilutions	<u>✓</u>	<u>NA or ...</u>	<u>XB</u>	<u>not performed or not reported</u>

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Other: Detection Limits				
Metals (6010)	✓	NO	XB	Some analyses PQL higher than method det. limit
Mercury (7470)	✓	✓	XB	
Pesticides/PCBs (8080)	✓	✓	XB	
Organophosphorous pesticides (8140)	✓	✓	XB	
VOA (8240)	✓	NO	XB	some analyses PQL higher than method det. limit
Herbicides (8150)	—	—	—	
BNA's (8270)	✓	✓	XB	
Field Cyanide (9010)	✓	✓	XB	
Methods Blanks	✓	XB NO NA	XB	Pinsol + Wash H ₂ O
Travel Blanks	✓	NO	XB	VOA only
Splits	✓	NA	XB	
Duplicates	✓	XB NO NA	XB	

Comments: _____

Analysis Distribution: _____

LAB NAME: BIOSPHERICS INCORPORATED

CLIENT: Hong West

DATE COLLECTED: June 11, 1990

DATE RECEIVED: June 13, 1990

MATRIX: Water

CASE: CS3(06/13)

Analytical Methodology/Sample Chronicle

<u>Parameter</u>	<u>Method</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
Metals	EPA 6010 7470	06/18/90 06/14/90	06/18-07/06/90 06/14/90
Pesticides	EPA 8080	06/13/90	06/16/90
Organophosphorus Pesticides	EPA 8140	06/18/90	06/19-20/90
Volatile Organics	EPA 8240		06/13-14/90
Semi-volatile Organics	EPA 8270	06/15/90	06/19/90
Cyanide	EPA 9010	06/19/90	06/20/90

QA Summary

Metals, Cyanide

- ✓ The process blank, replicate, matrix spike and laboratory control sample results were within acceptable limits.

Pesticides and Organophosphorus Pesticides

- ✓ The process blank and surrogate recovery results were within acceptable limits.

Volatile Organics

- ✓ The process blank, surrogate, matrix spike and matrix spike duplicate results were within acceptable limits.

Semi-volatile Organics

- * The process blank and surrogate recovery results were within acceptable limits. No matrix spike/matrix spike duplicate results are available due to insufficient sample volume.

TASK 9

Project: <u>YACU</u>		Site: <u>Tank Removal</u>	
Client: <u>Hong West + Assoc</u>		Phone: <u>206774-0106</u>	
Address: <u>PO Box 596</u>			
<u>Lynnwood, WA</u>		<u>98046</u>	
Sampler's Name/Firm:			
Phone:		Sampler's Signature:	

Sample Number	Date	Time	Matrix	No. of Containers	Preservative Used	Analyses Required	Remarks or Sample Location
90042-T9-1			H ₂ O				Wash water
90042-T9-2			H ₂ O				Recon Rinsate
90042-T9-5			H ₂ O				?
					*NOTE!! ✓ 1 EXTRA BOTTLE OF Sample #'s 90042-T9-1 & 90042-T9-2 WERE RECEIVED FOR ANALYSIS OF INSECTICIDES. THESE WERE LOGGED AS SEPARATE SAMPLES.		
					6/13/90 11:59:30		

Relinquished by: (Signature) ¹	Date/Time	Received by: (Signature)	Relinquished by: (Signature) ⁴	Date/Time	Shipping Carrier:
<u>[Signature]</u>	<u>6/11/4PM</u>				
Relinquished by: (Signature) ²	Date/Time	Received by: (Signature)	Received for Laboratory by: (Signature)	Date/Time	Shipping Ticket Number:
			<u>[Signature]</u>	<u>6/13/90</u>	
Relinquished by: (Signature) ³	Date/Time	Received by: (Signature)	Chain of Custody Seal: (Circle)	Lab Remarks	
			Intact Broken Absent	<u>[Signature]</u> / <u>[Signature]</u>	

QUALITY ASSURANCE CHECK SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): BIDSPHERICS, INC.Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042Site Location: YAKIMA, WASampling Date(s): June 11, 1990Submittal Date: June 11, 1990

Data Analysis Rev'd: _____

Sample Matrix/Type: Soil

Analyses:

/X/ Metals	/X/ ENAs	// Petroleum	// Other _____
/X/ Volatiles	// PAH/PN	// Phenolics	// _____
	/X/ Pesticides- Herbicides	// EP TOX	// _____

QA CHECKLISTOK or NO with COMMENTS

Analysis Matches Request? NO several VOA + BNA compounds requested were not analyzed for: VOA - trichlorofluoromethane + 2-chloroethyl vinyl ether, BNA - p-chloroaniline, indene(1,2-c,d) pyrene, ortho-cresol, para-cresol, n-nitrosodi-n-propylamine

Shipment Integrity? NO no chain of custody seal.

Analysis within Time Limits?

NO BNA's extracted after 7 day extraction holding time.

Methods Acceptable?: EPA methods OK

Calibration/Std's not provided

Blanks } -provided only when performed lab results ~~other~~ are
 Duplicates } outside Lab QA/QC limits.
 Dilutions } -unclear when dilutions are performed or not
 Spikes } performed.

Comments: _____

Analysis Distribution: _____

Note: NP = Not Performed; NA = Not Applicable; please list comments.

QA/QC CLP PROCESS SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): Biospherics, Inc.Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042Site Location: YAKIMA, WASampling Date(s): June 11, 1990Submittal Date: June 11, 1990

Date Analysis Rcv'd: _____

Sample Matrix/Type: Soil

Analyses:

/X/ Metals	/X/ ENAS	// Petroleum	// Other _____
/X/ Volatiles	// PAH/PN	// Phenolics	// _____
	/X/ Pesticides- Herbicides	// EP TOX	// _____

CLP CHECKLISTAnalysis Matches Request? NO, see Level IShipment Integrity? NO, see Level IAnalysis in Time Limits? NO, see level ILab Biospherics, Inc.

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Quarterly Verification	NA		XXB	
Instrument Calibration	✓	NO	XXB	see level I
AA/ICP Stds	✓	NO	XXB	"
Blanks	✓	NO	XXB	"
ICP Interference	✓	NO	XXB	"
Spike Recovery	✓	NO	XXB	"
Surrogate Recovery	✓	NO	XXB	"
Duplicates (Lab)	✓	NO	XXB	"
Lab Controls	NA		XXB	"
Serial Dilutions	✓	NO/NA	XXB	not necessary or not recorded.

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Other: Detection Limits				
Metals (6010)	✓	NO	LB	PQL above method det. limit
Mercury (1470)	✓	NO LB	LB	PQL above method det. limit
Pesticides / PCBs (8080)	✓	NO	LB	
Organophosphorous pesticides (8140)	✓	NO	LB	"
VOA (8240)	✓	NO	LB	"
Herbicides (8150)	—	—	—	
BNA's (8270)	✓	NO	LB	PQL above method det. limit
<u>Field</u>				
Methods Blanks	✓	NO	LB	unless rinseate + wash
Travel Blanks	✓	NO	LB	water quantities. NO VOA trip blank
Splits	✓	NA	LB	
Duplicates	✓	NO	LB	not collected

Comments: _____

Analysis Distribution: _____

LAB NAME: BIOSPHERICS INCORPORATED

CLIENT: HONG WEST

DATE COLLECTED: June 11, 1990

DATE RECEIVED: June 13, 1990

MATRIX: Soil

UNITS: mg/kg dry weight

CASE: 005(06/13)

Analytical Methodology/Sample Chronicle

<u>Parameter</u>	<u>Method</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
Metals	EPA 3050/6010	06/15/90	06/18-19/90
Mercury	EPA 7470	06/14/90	06/14/90
Pesticides	EPA 8080	06/14/90	06/17,20/90
Organophosphorus Pesticides	EPA 8140	06/18/90	06/19-20/90
Volatile Organics	EPA 8240		06/13/90
Semi-volatile Organics	EPA 8270	06/20/90	06/21-22/90

QA Summary

***Metals, Mercury**

The process blank, replicate and laboratory control sample results were within acceptable limits. Sample 90042-WPS-1 was spiked prior to digestion. For selenium the digestion spike recovery was 347%. A post digestion spike on the original sample yielded a 42% recovery. This would indicate a negative interferant. The digestion spike for antimony yielded a 63% recovery. All other spike recoveries were within acceptable limits.

***Pesticides and Organophosphorus Pesticides, Volatile Organics**

The process blank and surrogate recovery results were within acceptable limits.

***Semi-volatile Organics**

The process blank, surrogate and matrix spike recovery results were within acceptable limits.

The relative percent difference for the matrix spike/matrix spike duplicate on 90042-WPS-2 was within acceptable limits, except for pentachlorophenol where the RPD was 128%.

TASK 11

2 WK TA

Project: <u>PARL</u> Site: <u>Washdown Rd</u> Client: <u>HONG WEST ASSOC</u> Phone: <u>206 774 0106</u> Address: <u>PO Box 596</u> <u>Lynnwood, WA 98046</u> Sampler's Name/Firm: _____ Phone: _____ Sampler's Signature: _____					<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:15%;">Preservative Used</th> <th style="width:15%;">Analyses Required</th> <th style="width:15%;">Voa 8246</th> <th style="width:15%;">Semi-Voa 8240</th> <th style="width:15%;">Pesticides 8050</th> <th style="width:15%;">No PCB Total Metals (6)</th> <th style="width:15%;">8140 Organophos Test</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>										Preservative Used	Analyses Required	Voa 8246	Semi-Voa 8240	Pesticides 8050	No PCB Total Metals (6)	8140 Organophos Test								Remarks or Sample Location	
Preservative Used	Analyses Required	Voa 8246	Semi-Voa 8240	Pesticides 8050	No PCB Total Metals (6)	8140 Organophos Test																								
Sample Number	Date	Time	Matrix	No. of Containers																										
90042-WPS-1			SOIL	1								Please separate for different parameters in lab!																		
90042-WPS-2			SOIL	1																										
90042-WPS-3			SOIL	1																										
90042-WPS-4			SOIL	1																										
90042-T11-1			H ₂ O									Did Not Sample used same Rinse water as in Task 9																		
90042-T11-2			H ₂ O																											
90042-T11-3			H ₂ O																											
					ELIMINATED																									

Relinquished by: (Signature) ¹		Date/Time		Received by: (Signature)		Relinquished by: (Signature) ⁴		Date/Time		Shipping Carrier:	
<u>Doug Keller</u>		<u>6/11 4pm</u>				<u>Jennifer Chambers</u>		<u>6/11 4:00</u>			
Relinquished by: (Signature) ²		Date/Time		Received by: (Signature)		Received for Laboratory by: (Signature)		Date/Time		Shipping Ticket Number:	
						<u>Jennifer Chambers</u>		<u>6/11 4:00</u>			
Relinquished by: (Signature) ³		Date/Time		Received by: (Signature)		Chain of Custody Seal: (Circle)		Lab Remarks			
						Intact Broken <u>Absent</u>		<u>Good / Cool</u>			

Laboratory Data QC and Statistical Evaluation

I. INTRODUCTION

The Yakima Agricultural Research Laboratory (YARL) operated a septic tank system for the disposal of waste laboratory chemicals. The system involved a septic tank, wash pad, and drainfield. For the purpose of this evaluation, the three components of the septic system are referred to as the site.

The site has undergone closure activities and excavation in accordance with the RCRA hazardous waste facility closure requirements (4 CFR 265, Subpart G). As a component to certifying final closure, soil samples have been collected and analyzed from on-site and off-site (background) areas. This evaluation is an assessment of the accuracy and precision of the analytical results and it involved a two step approach:

- 1) A quality control (QC) review
- 2) A statistical evaluation

Prior extensive analyses of soil samples from the YARL site revealed that the pesticides DDT, and dieldrin are the preliminary contaminants of concern. Therefore, the focus of the QC review and statistical evaluation is on these two compounds. The following details the QC and statistical methods, findings, and conclusions.

II. METHODS

QC Review

The QC review focuses on analytical data generated from soil sampling of background and on-site areas. Four background and seventeen on-site samples were analyzed. The information necessary to conduct this review was obtained from the draft closure plan, chain of custody forms, the contract laboratory reports, and in-house QA/QC documents prepared by Hong West & Associates (Hong West).

The analytical data was checked for the following: EPA sampling, preservation, and analysis methods; holding times; detection limits; blanks, spikes, and surrogates.

Sampling and Analysis Protocols

The soil sampling protocol as detailed in the Hong West Project Plan (May 31, 1990) satisfies the industry accepted equipment decontamination methods. The process involved the following eight steps

- Steam cleaning or high pressure wash
- Hexane rinse (optional) to remove persistent contaminants
- Distilled water rinse
- Dilute HCl acid rinse (pH < 2)
- Distilled H₂O rinse
- Methanol (1:1 solution) rinse
- Double distilled H₂O rinse

Samples were collected with stainless steel augers or scoops and were immediately sealed in jars, placed in coolers containing blue ice, and shipped overnight to the contract laboratory. The samples were accompanied by completed chain-of-custody forms. This is in full conformance with the preservation and documentation protocol outlined in EPA SW-846, Test Methods for Evaluating Solid Waste, Volume II, Field Manual (1986) [SW-846].

The contract laboratory, Biospherics Incorporated, conducted the requested analysis, EPA-8080, for pesticides. This is the appropriate method, as per SW-846, to analyze for DDT and dieldrin.

Statistical Evaluation

The analytical results, as reported by Biospherics Incorporated, were statistically evaluated for accuracy and precision, per SW-846. The data were segregated for statistical evaluation according to the four sampling zones:

- Background (4 samples)
- Septic tank area (6 samples)
- Wash pad area (4 samples)
- Drainfield (7 samples)

As detailed in Chapter 9 of SW-846, the statistical evaluation calculated the mean, standard deviation, upper 90% confidence interval (CI), and the appropriate number of samples necessary to accurately and precisely represent the soil concentrations in each zone.

If the CI, for DDT or dieldrin, exceeded the regulatory threshold (RT) cleanup level, the soil in that particular zone is considered to have contaminant concentrations above the RT.

III. FINDINGS

QC Review

The QC review of available documents and reports revealed the following:

- The samples were collected, stored, and documented properly prior to shipment to the contract laboratory
- For undetermined reasons, two of the sample shipments, one of background and one of drainfield samples, were received by the laboratory at or close to room temperature. This occurred in spite of the fact that the coolers were packed with blue ice. The samples were received within 24-hours of sampling. This situation was addressed in a status memo regarding the Preliminary Interpretation of Drainfield Soil Analysis; June 1990. Comparison with previous testing results (1988) indicated that the likelihood of significant negative error was small (see attachment).
- One of the five chain-of-custody forms included in the report was not signed by the contract laboratory.
- The contract laboratory followed the appropriate analytical methods, as presented in EPA SW-846.
- All samples were analyzed within the required holding time (two weeks).
- The contract laboratory reported acceptable blank, spike, and surrogate results, but did not provide detailed written documentation.

Statistical Evaluation

The statistical evaluation of the analytical results produced the following:

DDT (all numbers in parts per billion)

	RT ¹	Ave.	Min.	Max.	Stand. Dev.	CI ²
Background	1000	65.2	0.35	140	75.3	126.9
Septic Tank Area	1000	11.6	0.5	67	27.1	27.9
Wash Pad Area	1000	1.7	0.1	5.2	2.27	3.6
Drainfield	1000	22.5	0.4	82	29.5	38.5

Dieldrin (all numbers in parts per billion)

	RT ¹	Ave.	Min.	Max.	Stand. Dev.	CI ²
Background	44	4.3	0.35	13	6	9.2
Septic Tank Area	44	9.7	0.5	5.7	11.4	16.6
Wash Pad Area	44	10.6	0.1	42	21	27.8
Drainfield	44	15.3	0.4	39 ³	16	24

1. RT = Regulatory threshold expressed as the clean-up level
2. CI = Statistically calculated upper 90% confidence interval
3. This sample required added dilution in the laboratory, therefore the detection limit was raised to <79 ppb. No sample in the drainfield detected Dieldrin, but as a standard statistical protocol the maximum = ½ (detection limit).

The statistical evaluation reveals no zone of sampling with concentrations of DDT or dieldrin above their respective RT's. It also reveals that all sites were below or undistinguishable from background for dieldrin and DDT.

As per EPA SW-846, the number of samples from each zone was further evaluated to establish if the database was sufficient to accurately represent the population. This calculation was performed for each constituent in all four zones, and indicated an appropriate number of samples were analyzed in each zone, i.e., the database in each zone was sufficient to permit reliable conclusions.

IV. CONCLUSIONS

The appropriate number of samples was collected and analyzed to accurately and precisely assess BOTH background and on-site (defined as the remediated units only) soil conditions associated with the former septic tank system at the YARL facility. Quality control deficiencies associated with an unsigned chain-of-custody form and 2 sets of samples received at room temperature, do not appear to affect the general conclusions. Results correlated with previous sampling of the drainfield area and samples were analyzed within 24-hours of sampling. These two facts indicate that the data is reliable. According to the contract laboratory, the laboratory analyses followed EPA guidelines and protocols and achieved acceptable blank, spike, and surrogate results, as reported.

The statistical evaluation reveals DDT and dieldrin to be in concentrations below the regulatory thresholds in each remediation zone. Therefore, no further RCRA closure action is required.

QUALITY ASSURANCE CHECK SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): BIDSPHERICS, INC.Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042 TA-12Site Location: YAKIMA, WASampling Date(s): June 19, 1990Submittal Date: June 20, 1990

Date Analysis Rec'd: _____

Sample Matrix/Type: water

Analyses:

<input checked="" type="checkbox"/> Metals	<input checked="" type="checkbox"/> RNAs	<input type="checkbox"/> Petroleum	<input checked="" type="checkbox"/> Other <u>Cyanide?</u>
<input checked="" type="checkbox"/> Volatiles	<input type="checkbox"/> PAH/PN	<input type="checkbox"/> Phenolics	<input type="checkbox"/> _____
	<input checked="" type="checkbox"/> Pesticides- Herbicides	<input type="checkbox"/> EP TOX	<input type="checkbox"/> _____

QA CHECKLISTOK or NO with COMMENTS

Analysis Matches Request? NO NDA results for T12-1 missing, no cyanide results although not specifically requested on CQC. Several ~~NA~~ BNA requested in project plan were not analyzed. These are listed in comments section.

Shipment Integrity? NO Chain of custody seal absent, received by lab at room temp

Analysis within Time Limits? NO BNA's extracted after 7 day holding time ✓

Methods Acceptable?: OK

Calibration/Std's not provided

Blanks

Duplicates

Dilutions

Spikes

- provided only when lab results are outside lab QA/QC limits, none provided w/ these results.

- unclear when dilutions are performed or not.

Comments: ~~NA~~ BNA's missing: p-chloroaniline, indeno (1,2-c,d) pyrene, m-, o-, p- nitroaniline, n-nitrosodi-n-propylamine, ortho-cresol, and para cresol

* Date incorrect on Analytical Methodology/Sample chronicle

Analysis Distribution: _____

Note: NP = Not Performed; NA = Not Applicable; please list comments.

CAS-QA.403 IK

QA/QC CLP PROCESS SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): Biospherics, Inc.Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042Site Location: YAKIMA, WASampling Date(s): June 19, 1990Submittal Date: June 20, 1990

Date Analysis Rcv'd: _____

Sample Matrix/Type: Water

Analyses:

<input checked="" type="checkbox"/> Metals	<input checked="" type="checkbox"/> BRAs	<input type="checkbox"/> Petroleum	<input checked="" type="checkbox"/> Other <u>Cyanide?</u>
<input checked="" type="checkbox"/> Volatiles	<input type="checkbox"/> PAH/PN	<input type="checkbox"/> Phenolics	<input type="checkbox"/>
	<input checked="" type="checkbox"/> Pesticides- Herbicides	<input type="checkbox"/> EP TOX	<input type="checkbox"/>

CLP CHECKLISTAnalysis Matches Request? NO, see level I Shipment Integrity? NO, see level IAnalysis in Time Limits? NO, see level I Lab Biospherics, Inc.

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Quarterly Verification	<u>NA</u>		<u>XB</u>	
Instrument Calibration	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>not provided</u> <u>or see level I</u>
AA/ICP Stds	<u>✓</u>	<u>NO</u>	<u>XB</u>	
Blanks	<u>✓</u>	<u>NO</u>	<u>XB</u>	
ICP Interference	<u>✓</u>	<u>NO</u>	<u>XB</u>	
Spike Recovery	<u>✓</u>	<u>NO</u>	<u>XB</u>	
Surrogate Recovery	<u>✓</u>	<u>NO</u>	<u>XB</u>	
Duplicates (Lab)	<u>✓</u>	<u>NO</u>	<u>XB</u>	
Lab Controls	<u>NA</u>		<u>XB</u>	
Serial Dilutions	<u>✓</u>	<u>NO/NA</u>	<u>XB</u>	<u>not provided or</u> <u>not performed</u>

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Other: Detection Limits				
Metals (6010)	✓	NO	XB	Tin det limit PQL ^{above method} det. limit.
Mercury (7470)	✓	✓	XB	
Pesticides/PCBs (8080)	✓	NO	XB	Sometimes PQL limit above method det. limit.
Organophosphorous pesticides (8140)	✓	✓	XB	
VOA (8240)	✓	NO	XB	Sometimes PQL limit above method det. limit.
Herbicides (8150)	✓	✓	XB	
BNA's (8270)	✓	✓	XB	
<u>Field</u>				
Methods Blanks	✓	NO	XB	unless rinsate applied
Travel Blanks	✓	NO	XB	no VOA trip blank
Splits	✓	NA	XB	
Duplicates	✓	✓	XB	2 rinsates, one duplicate ?

Comments: _____

Analysis Distribution: _____

LAB NAME: BIOSPHERICS INCORPORATED

CLIENT: Hong West

DATE COLLECTED: June 11¹⁹, 1990

DATE RECEIVED: June 13[?], 1990

MATRIX: Water

CASE: CS3(06/13)

Analytical Methodology/Sample Chronicle

<u>Parameter</u>	<u>Method</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
Metals	EPA 6010	07/09/90	07/10-18/90
	EPA 7470	06/26/90	06/26/90
Pesticides	EPA 8080	06/26/90	06/28-29/90
Organophosphorus Pesticides	EPA 8140	06/25/90	06/27-28/90
Volatile Organics	EPA 8240		06/25/90
Semi-volatile Organics	EPA 8270	06/26/90	06/27/90

QA Summary

*Metals, Mercury

The process blank and laboratory control sample results were within acceptable limits.

*Pesticides and Organophosphorus Pesticides

The process blank and surrogate recovery results were within acceptable limits.

*Volatile Organics

The process blank and surrogate recovery results were within acceptable limits. Due to excessive foaming of the sample 90042-T12-1 was not analyzed.

*Semi-volatile Organics

The process blank and surrogate recovery results were within acceptable limits. A matrix spike/matrix spike duplicate (MS/MSD) were performed on 90042-T12-2. The surrogate recovery for the MS/MSD was within acceptable limits except for 2-fluorobiphenyl where the recovery was 26 and 33%, respectively. For the sample spiked with base/neutrals the relative percent difference for 3 out of 6 compounds were outside of the recommended QC limits and the percent recovery for 4 out of 12 were outside of the recommended QC limits.

Task 12

[illegible]

White-Return to Client

Yellow-Retain by Lab (Project File)

Pink-Retain by Lab (Client Services)

Gold-Retain by Sampler

QUALITY ASSURANCE CHECK SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): BIOSPHERICS, INC.Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042 TASK 12Site Location: YAKIMA, WASampling Date(s): June 19, 1990Submittal Date: June 20, 1990

Data Analysis Provided: _____

Sample Matrix/Type: Soil

Analyses:

<input checked="" type="checkbox"/> Metals	<input checked="" type="checkbox"/> RNAs	// Petroleum	<input checked="" type="checkbox"/> Other <u>Cyanide</u>
<input checked="" type="checkbox"/> Volatiles	// PAH/PN	// Phenolics	// _____
	<input checked="" type="checkbox"/> Pesticides- Herbicides	// EP TOX	// _____

QA CHECKLISTOK or NO with COMMENTS

Analysis Matches Request? NO several VOA + BNA compounds requested in project plan were not analyzed VOA - trichlorofluoromethane and 2-chloroethyl vinyl ether; BNA - p-chloroaniline, indeno(1,2-c,d)pyrene, m-, o-, p-nitroaniline, n-nitrosodi-n-propylamine, ortho-cresol, + para-cresol. Cyanide not requested, but performed

Shipment Integrity? NO no chain of custody seal, samples almost room T. see comments

Analysis within Time Limits? NO BNA's extracted after 7 days.

Methods Acceptable?: OK

Calibration/Std's not provided

Blanks

Duplicates

Dilutions

Spikes

- provided only when lab results are outside lab QA/QC limits, none provided w/ these results.

- unclear when dilutions performed or not.

Comments: Cyanide results missing

Analysis Distribution: _____

Note: NP = Not Performed; NA = Not Applicable; please list comments.

QA/QC CLP PROCESS SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): Biospherics, Inc.Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042Site Location: YAKIMA, WASampling Date(s): June 19, 1990Submittal Date: June 20, 1990

Date Analysis Rcv'd: _____

Sample Matrix/Type: Soil

Analyses:

<input checked="" type="checkbox"/> Metals	<input checked="" type="checkbox"/> ENAS	<input type="checkbox"/> Petroleum	<input checked="" type="checkbox"/> Other <u>Cysuide</u>
<input checked="" type="checkbox"/> Volatiles	<input type="checkbox"/> PAH/PN	<input type="checkbox"/> Phenolics	<input type="checkbox"/>
	<input checked="" type="checkbox"/> Pesticides- Herbicides	<input type="checkbox"/> EP TOX	<input type="checkbox"/>

CLP CHECKLIST

Analysis Matches Request? NO see level I Shipment Integrity? NO, see level IAnalysis in Time Limits? NO see level I Lab Biospherics, Inc.

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Quarterly Verification	<u>NA</u>	<u> </u>	<u>LB</u>	<u> </u>
Instrument Calibration	<u>✓</u>	<u>NO</u>	<u>LB</u>	<u>not provided</u>
AA/ICP Stds	<u>✓</u>	<u>NO</u>	<u>LB</u>	<u>"</u>
Blanks	<u>✓</u>	<u>NO</u>	<u>LB</u>	<u>one provided 8140 (method blank)</u>
ICP Interference	<u>✓</u>	<u>NO</u>	<u>LB</u>	<u>not provided</u>
Spike Recovery	<u>✓</u>	<u>NO</u>	<u>LB</u>	<u>"</u>
Surrogate Recovery	<u>✓</u>	<u>NO</u>	<u>LB</u>	<u>"</u>
Duplicates (Lab)	<u>✓</u>	<u>NO</u>	<u>LB</u>	<u>"</u>
Lab Controls	<u>NA</u>	<u> </u>	<u>LB</u>	<u> </u>
Serial Dilutions	<u>✓</u>	<u>NO/NA</u>	<u>LB</u>	<u>not provided/not performed</u>

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Other: Detection Limits				
Metals (6010)	✓	NO	LB	POL sometimes higher than method detection limits
Mercury (7470)	✓	NO	LB	
Pesticides/PCBs (8080)	✓	NO	LB	"
Organophosphorous pesticides (8140)	✓	✓	LB	
VOA (8240)	✓	NO	LB	POL sometimes higher than method detection limit
Herbicides (8150)	—	—	—	
BNAs (8270) Cyanide (9010)	✓	NO	LB	
<u>Field</u>				
Methods Blanks	✓	NO	LB	none done
Travel Blanks	✓	NO	LB	no VOA trip blank
Splits	✓	NA	LB	
Duplicates	✓	✓	LB	

Comments: _____

Analysis Distribution: _____

LAB NAME: BIOSPHERICS INCORPORATED

CLIENT: Hong West

DATE COLLECTED: June 19, 1990

DATE RECEIVED: June 20, 1990

MATRIX: Soil

CASE: CS8(06/22)

Analytical Methodology/Sample Chronicle

<u>Parameter</u>	<u>Method</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
Metals	EPA 6010 7470	07/03/90 06/26/90	07/11-17/90 06/26/90
Pesticides	EPA 8080	06/27/90	06/28-29/90
Organophosphorus Pesticides	EPA 8140	06/25/90	06/26/90
Volatile Organics	EPA 8240		06/25-26/90
Semi-volatile Organics	EPA 8270	06/28,7/17/90	07/02,18/90
Cyanide	EPA 9010	06/25/90	06/28/90

QA Summary

*Metals, Cyanide

The process blank, replicate and laboratory control sample results were within acceptable limits.

*Pesticides and Organophosphorus Pesticides, Volatile Organics

The process blank and surrogate recovery results were within acceptable limits.

*Semi-volatile Organics

The process blank, surrogate, matrix spike and matrix spike duplicate results were within acceptable limits.

TASK 12

Project: YARL Site: Drainfield
Client: Hong West + Assoc Phone: 206 774 0106
Address: PO Box 596
Lynnwood, WA. 98046
Sampler's Name/Firm: Stephen Greene
Phone: Same Sampler's Signature: [Signature]

Preservative Used

Analyses
Required

VOA
8240
semi-voa
8270
Pesticides 1080
organophos
pesticides
metals TCL

Sample Number	Date	Time	Matrix	No. of Containers
DF-90-1	6/19/90	104M	SOIL	5
DF-90-2		1030AM		
DF-90-3		1100AM		
DF-90-4		1200PM		
DF-90-5		1230PM		
DF-90-6		1230PM		
DF-90-7		100PM		

Remarks or Sample Location				
<u>Drainfield</u>				
<u>Duplicate</u>				

Relinquished by: (Signature) ¹ <u>[Signature]</u>	Date/Time <u>6/20</u> <u>8:30 AM</u>	Received by: (Signature) <u>[Signature]</u>	Relinquished by: (Signature) ⁴ <u>[Signature]</u>	Date/Time <u>6/20</u> <u>9:30</u>	Shipping Carrier: <u>Fed Express</u>
Relinquished by: (Signature) ²	Date/Time	Received by: (Signature)	Received for Laboratory by: (Signature) <u>[Signature]</u>	Date/Time <u>6/20</u> <u>9AM</u>	Shipping Ticket Number:
Relinquished by: (Signature) ³	Date/Time	Received by: (Signature)	Chain of Custody Seal (Circle) Intact Broken <u>Absent</u>	Lab Remarks <u>Received almost room Temp</u>	

QUALITY ASSURANCE CHECK SHEET

Date: 9-30-90QA Evaluator: Laurie BantonLab(s): BIOSPHERICS, INC.Task 19-1 First overexcavationProject Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042 TASK 19.1Site Location: YAKIMA, WASampling Date(s): 10/29/90Submittal Date: 10/23/90

Date Analysis Rec'd: _____

Sample Matrix/Type: Soil/water

Analyses:

<input checked="" type="checkbox"/> Metals	<input checked="" type="checkbox"/> ENAs	<input type="checkbox"/> Petroleum	<input checked="" type="checkbox"/> Other <u>Cyanide</u>
<input checked="" type="checkbox"/> Volatiles	<input type="checkbox"/> PAH/PN	<input type="checkbox"/> Phenolics	<input type="checkbox"/>
	<input checked="" type="checkbox"/> Pesticides- Herbicides	<input type="checkbox"/> EP TOX	<input type="checkbox"/>

QA CHECKLISTOK or NO with COMMENTS

Analysis Matches Request? NO Some BNA compounds requested were not analyzed. - p-chloroaniline, indene(1,2-c,d)pyrene, m-c-p-nitroaniline, n-nitrosodi-n-propylamine, ortho-cresol, para-cresol, and VOA's missing trichlorofluoromethane + 2-chloroethyl vinyl ether. off + on.

Shipment Integrity? OK

Analysis within Time Limits? OKMethods Acceptable?: OK

Calibration/Stds not provided

Blanks provided only for VOA + BNA's

Duplicates Lab dupl. only matrix spike duplicate provided for VOA + BNA's for soils.

Dilutions not provided or not necessary

Spikes information on matrix spikes provided for VOA + BNA's, otherwise only provided when results outside Lab QA/QC limits.

Comments: Additional QA/QC data only provided when results
outside Lab QA/QC limits

Analysis Distribution: _____

Note: NP = Not Performed; NA = Not Applicable; please list comments.

CAS-QA.403 LK

QA/QC CLP PROCESS SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): Biospherics, INC.Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042Site Location: YAKIMA, WASampling Date(s): 10/23/90Submittal Date: 10/23/90

Date Analysis Rcv'd: _____

Sample Matrix/Type: soil/water

Analyses:

<input checked="" type="checkbox"/> Metals	<input checked="" type="checkbox"/> ENAs	<input type="checkbox"/> Petroleum	<input checked="" type="checkbox"/> Other <u>cyanide</u>
<input checked="" type="checkbox"/> Volatiles	<input type="checkbox"/> PAH/PN	<input type="checkbox"/> Phenolics	<input type="checkbox"/>
	<input checked="" type="checkbox"/> Pesticides- Herbicides	<input type="checkbox"/> EP TOX	<input type="checkbox"/>

CLP CHECKLIST

Analysis Matches Request? NO, see level I Shipment Integrity? OKAnalysis in Time Limits? OK Lab Biospherics, INC.

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Quarterly Verification	<u>NA</u>	<u> </u>	<u>LB</u>	<u> </u>
Instrument Calibration	<u>✓</u>	<u>NO</u>	<u>LB</u>	<u>not provided</u>
AA/ICP Stds	<u>✓</u>	<u>NO</u>	<u>LB</u>	<u>"</u>
Blanks	<u>✓</u>	<u>NO</u>	<u>LB</u>	<u>see level I</u>
ICP Interference	<u>✓</u>	<u>NO</u>	<u>LB</u>	<u>not provided</u>
Spike Recovery	<u>✓</u>	<u>NO</u>	<u>LB</u>	<u>see level I</u>
Surrogate Recovery	<u>✓</u>	<u>NO</u>	<u>LB</u>	<u>provided for method 8080, 8270, + 8240 only, see level I</u>
Duplicates (Lab)	<u>✓</u>	<u>NO</u>	<u>LB</u>	<u>see level I</u>
Lab Controls	<u>NA</u>	<u> </u>	<u>LB</u>	<u> </u>
Serial Dilutions	<u>✓</u>	<u>NA/NO</u>	<u>LB</u>	<u>not provided or not necessary.</u>

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Other: Detection Limits				
Metals (6010) Cyanide (9010)	✓	NO	LB	Sometimes PGL higher than method det. l.
Mercury (7470)	✓	NO	LB	"
Pesticides / PCBs (8080)	✓	NO	LB	"
Organophosphorous pesticides (8140)	✓	NO	LB	"
VOA (8240)	✓	NO	LB	"
Herbicides (8150)				"
BNA's	✓	NO	LB	"
<u>Field</u>				
Methods Blanks	✓	NO	LB	unless wash water + decon qualifies
Travel Blanks	✓	✓	LB	
Splits	✓	NA	LB	
Duplicates	✓	NA	LB	

Comments: _____

Analysis Distribution: _____

BIOSPHERICS INCORPORATED

DATE COLLECTED: October 23, 1990

DATE RECEIVED: October 24, 1990

MATRIX: Water

CASE: CS1(10/24)

Analytical Methodology/Sample Chronicle

<u>Parameter</u>	<u>Method</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
Metals	EPA 6010/7000's	10/25,31/90	10/26-11/2/90
Mercury	EPA 7470	10/31/90	11/1/90
Pesticides/PCB's	EPA 8080	10/26/90	10/30/90
Organophosphorus Pesticides	EPA 8140	10/26/90	10/28/90
Volatile Organics	EPA 8240		10/26/90
Semivolatile Org.	EPA 8270	10/24-29/90	10/30/90
Cyanide	EPA 9010	10/24/90	10/29/90

Non-conformance Summary

Volatile Organics, Mercury, Pesticides/PCB's
There are no nonconformances to report.

Metals

The matrix spike for selenium for sample 90042-T19-3 had a recovery of 30%.

Organophosphorus Pesticides

The surrogate recovery results for both waters were outside of acceptable limits.

Semivolatile Organics

Due to insufficient sample volume for the waters, a blank spike was done instead of a matrix spike/matrix spike duplicate. Samples and blank extracts were concentrated on two different dates, October 24 & 29, 1990.

Cyanide

The matrix spike was done at 200 µg/L rather than 100 µg/L.

LAB NAME: BIOSPHERICS INCORPORATED

CLIENT: Hong West

DATE COLLECTED: October 23, 1990

DATE RECEIVED: October 24, 1990

MATRIX: Soil

CASE: CS1(10/24)

Analytical Methodology/Sample Chronicle

<u>Parameter</u>	<u>Method</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
Metals	EPA 6010 7471	10/25,31/90 10/31/90	10/26-11/2/90 10/31/90
Pesticides/PCB's	EPA 8080	10/25/90	10/30/90
Organophosphorus Pesticides	EPA 8140	10/25/90	10/26,29/90
Volatile Organics	EPA 8240		10/26,29/90
Semi-volatile Organics	EPA 8270	10/29/90	10/30-31/90
Cyanide	EPA 9010	10/26/90	10/29/90

Non-Conformance Summary

Metals

The matrix spike for lead for sample 90042-WP102 had a recovery of 692%.

Cyanide, Mercury, Volatile Organics, Pesticide, PCB's
There are no non-conformances to report.

Semi-volatile Organics

The surrogate recoveries on the matrix spike were outside of acceptable limits. Low recovery was obtained for the matrix spike/matrix spike duplicate.

Organophosphorus Pesticides

The surrogate recovery for all soils were outside of acceptable limits.

BIOSPHERICS INCORPORATED

12051 Indian Creek Ct.
Beltsville, MD 20705
(301) 369-3900

Chain of Custody Record

IN-SITU
SOIL SAMPLING

7 DAY TA

Project: <u>XALL</u> Site: <u>ATLANTA</u>					Preservative Used							<div style="display: flex; flex-direction: column; align-items: center;"> <div>Analyses Required</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">VOA 8240</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">SEMI VOA 8270</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TCL METALS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">PEST/PCB 8080</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">ORGANOPHOS 8140</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">CYANIDE</div> </div>
Client: <u>HOMB WEST + ASSOC</u> Phone: <u>206 774 0106</u>												
Address: <u>P.O. Box 596</u>												
<u>LYNNWOOD, WA. 98046</u>												
Sampler's Name/Firm: <u>Doug Geller</u>												
Phone: <u>774 0106</u> Sampler's Signature: <u>Doug Geller</u>												
Sample Number	Date	Time	Matrix	No. of Containers	Remarks or Sample Location							
90042 TP 101			SOIL	6	X	X	X	X	X	X		TANK PIT BOTTOM (N)
" " 102					X	X	X	X	X	X		" " " (S)
" " 103					X	X	X	X	X	X		TANK PIT SIDEWALL (N)
" " 104					X	X	X	X	X	X		" (E)
" " 105					X	X	X	X	X	X		" (S)
" " 106					X	X	X	X	X	X		" (W)
90042 WP 101			SOIL	6	X	X	X	X	X	X		WASH PAD (W)
90042 WP 102			"	"	X	X	X	X	X	X		" (E)
90042 T19-3			WATER		X	X	X	X	X	X		DECON
90042 T19-4					X	X	X	X	X	X		WASH WATER
90042 T19-5				1	X							TRIP BLANK
Relinquished by: (Signature) <u>Doug Geller</u>					Date/Time <u>10/23 1pm</u>		Received by: (Signature)		Relinquished by: (Signature)		Date/Time	Shipping Carrier:
Relinquished by: (Signature)					Date/Time		Received by: (Signature)		Received for Laboratory by: (Signature) <u>Doug Geller</u>		Date/Time <u>10/24 10am</u>	Shipping Ticket Number:
Relinquished by: (Signature)					Date/Time		Received by: (Signature)		Chain of Custody Seal (Circle) Intact Broken Absent		Lab Remarks <u>Received Good / Cool</u>	

White - Return to Client

Yellow - Retain by Lab (Project File)

Pink - Retain by Lab (Client Services)

Gold - Retain by Sampler

BIOSPHERICS® INCORPORATED

12051 Indian Creek Ct.
Beltsville, MD 20705
(301) 369-3900

EXCAVATED SOIL SAMPLING

Chain of Custody Record

7 DAY TA

[illegible]

QUALITY ASSURANCE CHECK SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): BIDSPHERICS, INC.2nd overexcavation 19.2Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042 T752 19.2Site Location: YAKIMA, WASampling Date(s): June 12, '91Submittal Date: June 12, '91

Date Analysis Prov'd: _____

Sample Matrix/Type: Soil/Water

Analyses:

// Metals	// ENAs	// Petroleum	// Other
// Volatiles	// PAH/PN	// Phenolics	//
	// Pesticides-	// EP TOX	//
	Herbicides		

QA CHECKLISTOK or NO with COMMENTSAnalysis Matches Request? OK!Shipment Integrity? NO, no comments from lab or receiving signature on chain of custody sheet.Analysis within Time Limits? OK!Methods Acceptable?: OK!

Calibration/Std's not provided

Blanks not provided

Duplicates matrix spike duplicate discussed when doesn't meet lab QA/QC limits.

Dilutions not provided or not performed

Spikes provided only when results outside lab QA/QC limits.

Comments: _____

Analysis Distribution: _____

Note: NP = Not Performed; NA = Not Applicable; please list comments.

QA/QC CLP PROCESS SHEET

Date: 9-30-91QA Evaluator: Laurie BentonLab(s): Biospherics, Inc.Project Name: YAKIMA AGRICULTURAL
RESEARCH LABORATORYProject No: 90042Site Location: YAKIMA, WASampling Date(s): June 12, 1991Submittal Date: June 12, 1991

Date Analysis Rcv'd: _____

Sample Matrix/Type: Soil/Water

Analyses:

// Metals	// ENAs	// Petroleum	// Other _____
// Volatiles	// PAH/PN	// Phenolics	// _____
	// Pesticides- Herbicides	// EP TOX	// _____

CLP CHECKLISTAnalysis Matches Request? yesShipment Integrity? NO, see level IAnalysis in Time Limits? yesLab Biospherics, Inc.

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Quarterly Verification	<u>NA</u>	_____	_____	_____
Instrument Calibration	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>not provided</u>
AA/ICP Stds	<u>✓</u>	<u>^{XB} NO NA</u>	<u>XB</u>	_____
Blanks	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>see level I</u>
ICP Interference	<u>✓</u>	<u>NA</u>	<u>XB</u>	_____
Spike Recovery	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>see level I</u>
Surrogate Recovery	<u>✓</u>	<u>^{XB} NO NA</u>	<u>XB</u>	_____
Duplicates (Lab)	<u>✓</u>	<u>NO</u>	<u>XB</u>	<u>see level I</u>
Lab Controls	<u>NA</u>	_____	<u>XB</u>	_____
Serial Dilutions	<u>✓</u>	<u>NA/NO</u>	<u>XB</u>	<u>not performed or not provided. unclear!</u>

<u>Laboratory</u>	<u>Reviewed</u>	<u>Acceptable</u>	<u>Initials</u>	<u>Comment</u>
Other: Detection Limits				
Metals (6010)				
Mercury (1470)				
Pesticides / PCBs (8080)	✓	✓	LB	
Organophosphorous pesticides (8140)				
VOA (8240)				
Herbicides (8150)				

Field

Methods Blanks	✓	NO	LB	unless wash water meets qual. facs
Travel Blanks	✓	NA	LB	not required
Splits	✓	NA	LB	
Duplicates	✓	NO	LB	none taken

Comments: _____

Analysis Distribution: _____

BIOSPHERICS INCORPORATED

CLIENT: Hong West

DATE COLLECTED: June 12, 1991

DATE RECEIVED: June 13, 1991

MATRIX: Soil/Water

LAB ID.: 91-06-1302

Analytical Methodology/Sample Chronicle

<u>Parameter</u>	<u>Method</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
Pesticides	EPA 8080	6/13/91	6/22,26/91

Non-conformance Summary

Due to an apparent interference, spike results for the matrix spike and matrix spike duplicate were above acceptable limits for dieldrin, endrin, and 4,4'-DDT. The spike blank results, however, were acceptable: dieldrin (110%), endrin (130%), and 4,4'-DDT (120%). The data was released with confidence.

Pesticide
8080

Washburn Pad 2nd success

Dewon

Cold-Retain by Sampler

APPENDIX D - HAZARDOUS WASTE DISPOSAL DOCUMENTATION

Chem-Safe Services, Inc.

Chemical Storage and Hazardous Waste Management
Consulting Services

P.O. Box 616 • Kittitas, WA 98934 • (509) 968-3973 • FAX (509) 962-3255

October 17, 1991

Doug Geller
Hong West and Associates
18908, Highway 99
Lynnwood, WA 96036

Re: YARL Project Number P734

Dear Doug:

Enclosed please find the following forms associated with the disposal of contaminated waste water and contaminated soil from the U.S. Dept. of Agriculture in Yakima, Washington:

1. " Generator's Waste Material Profile Sheet" for waste water sent to:

Chemical Processors, Inc.
734 South Lucille St.
Seattle, WA 98134

This profile sheet explains the waste to be disposed prior to shipment.

2. E.P. Toxicity test results for the waste water profiled via item #1.
3. Manifest #11111 as proof of shipment and disposal of 17 drums of waste water to Chemical Processor's, Inc.
4. Waste receipt as proof of delivery of the same 17 drums of waste water to Chemical Processor's, Inc. I will send you the formal Certificate of Disposal when I receive it from Chemical Processor's, Inc.

5. " Land Restriction Notification Form " and " Hard - Hammer Addendum " showing that the waste water was disposed a variance under 40 CFR 268.

6. " Generator Waste Product Questionnaire " for contaminated soil sent to:

Envirosafe Services of Idaho, Inc
10 1/2 Miles N.W. of Grandview
Missile Base Road
Grandview, ID 83424

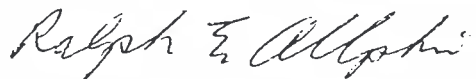
This profile sheet explains the waste to be disposed prior to shipment.

7. TCLP analysis results for sample of contaminated soil.

8. Manifests # 01027, 01028, 01029 and manifest notification for each manifest showing the contaminated soil was disposed via a national capacity variance under 40 CFR Part 268.35 (c).

If we can be of further service or answer any questions please call.

Thanks



Ralph E. Allphin
President

REA:tag

Encls

(1)

CHEMPRO

GENERATOR'S WASTE MATERIAL PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

CP# 44972

WASTE PROFILE SHEET CODE

A. GENERATOR INFORMATION

1. Generator Name: U.S. Dept. of Agriculture 2. Generator, USEPA/ ID: WAD120513957

3. Facility Address: 3706 W. Nob Hill Blvd.

City: Yakima State: WA Zip Code: _____

4. Generator Contact: Ralph E. Allphin 5. Title: Env. Consultant 6. Phone: (509) 968-3973

B. MAIL CHEMPRO INVOICES TO: 1. ☐ Generating Facility (A, above), or

2. Company Name: Chem-Safe Services 3. Phone: () _____

4. Address: P.O. Box 616

City: Kittitas State: WA Zip Code: 98934

5. Attn: Ralph E. Allphin

C. 1. NAME OF WASTE Waste Water Contaminated w/ Pesticides

2. PROCESS GENERATING WASTE Tank Removal from USDA Aesthetic Lab Site

3. Is this waste a Dioxin listed waste as defined in 40 CFR 261.31 (e.g., F020, F021, F022, F023, F026, F027 or F028)?

☐ Yes ☒ No If yes, contact your CHEMPRO sales representative for assistance before completing this form.

D. PHYSICAL CHARACTERISTICS OF WASTE

1. Color: <u>Murky Brown</u>	2. Physical State @ 70°F: <input type="checkbox"/> Solid <input checked="" type="checkbox"/> Semi-Solid <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Powder Other: _____	3. Layers: <input type="checkbox"/> Multilayered <input checked="" type="checkbox"/> Bi-Layered <input type="checkbox"/> Single Phased	4. Specific Gravity: <input type="checkbox"/> <.8 <input type="checkbox"/> 1.1-1.2 <input checked="" type="checkbox"/> .8-1.0 <input type="checkbox"/> 1.3-1.4 Exact/other _____	5. Free Liquids: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <u>90</u> %
--	---	--	--	---

6. pH: ☐ NA ☐ <2 ☐ 2-4 ☐ 4-6 ☒ 6-8 ☐ 8-10 ☐ 10-12.5 ☐ > 12.5 ☐ Range _____

7. Liquid Flash Point: ☐ < 70°F ☐ 70-99°F ☐ 100-139°F ☐ 140-199°F ☐ > 200°F ☒ None ☐ Closed Cup ☐ Open Cup

E. CHEMICAL COMPOSITION

1. Waste	RANGE		%
	MIN.	MAX.	
<u>Waste Water w/ following</u>			
<u>contaminates</u>		<u>100</u>	%
<u>Endrin</u>	<u>0.07</u>	<u>PPM</u>	%
<u>2,4-D</u>	<u>6800</u>	<u>PPM</u>	%
<u>Parathion</u>	<u>34</u>	<u>PPM</u>	%
<u>Disulfoton</u>	<u>82</u>	<u>PPM</u>	%
<u>Will have one drum of Clean up debris</u>			%
<u>& clothing</u>			%

Please note: The chemical composition total in the maximum column must be greater than or equal to 100%.

TOTAL _____ %

2. Indicate if this waste contains any of the following:

	NONE	OR	LESS THAN	OR	ACTUAL
PCB's	<input checked="" type="checkbox"/>		<input type="checkbox"/> < 50 ppm	<input type="checkbox"/>	ppm
Cyanides	<input checked="" type="checkbox"/>		<input type="checkbox"/> < 50 ppm	<input type="checkbox"/>	ppm
Phenolics	<input checked="" type="checkbox"/>		<input type="checkbox"/> < 50 ppm	<input type="checkbox"/>	ppm
Sulfides	<input checked="" type="checkbox"/>		<input type="checkbox"/> < 50 ppm	<input type="checkbox"/>	ppm

F. METALS Indicate if this waste contains any of the following:

METAL	1. <input checked="" type="checkbox"/> EP TOX/TCLP		2. <input type="checkbox"/> Total	
	LESS THAN	or	or	ACTUAL
(Parts Per Million)				
Arsenic (As)	<input checked="" type="checkbox"/> < 5	<input type="checkbox"/> 5-499	<input type="checkbox"/>	ppm
Barium (Ba)	<input checked="" type="checkbox"/> < 100	<input type="checkbox"/>	<input type="checkbox"/>	ppm
Cadmium (Cd)	<input checked="" type="checkbox"/> < 1	<input type="checkbox"/> 1-99	<input type="checkbox"/>	ppm
Chromium (Cr)	<input checked="" type="checkbox"/> < 5	<input type="checkbox"/>	<input type="checkbox"/>	ppm
Lead (Pb)	<input checked="" type="checkbox"/> < 5	<input type="checkbox"/> 5-499	<input type="checkbox"/>	ppm
Mercury (Hg)	<input checked="" type="checkbox"/> < 0.2	<input type="checkbox"/> 0.2-19	<input type="checkbox"/>	ppm
Selenium (Se)	<input checked="" type="checkbox"/> < 1	<input type="checkbox"/> 1-99	<input type="checkbox"/>	ppm
Silver (Ag)	<input checked="" type="checkbox"/> < 5	<input type="checkbox"/>	<input type="checkbox"/>	ppm
Chromium-Hex (Cr + 6)	<input checked="" type="checkbox"/> < 5	<input type="checkbox"/> 5-499	<input type="checkbox"/>	ppm
Copper (Cu)	<input checked="" type="checkbox"/> < 5	<input type="checkbox"/>	<input type="checkbox"/>	ppm
Nickel (Ni)	<input checked="" type="checkbox"/> < 5	<input type="checkbox"/> 5-133	<input type="checkbox"/>	ppm
Thallium (Tl)	<input checked="" type="checkbox"/> < 5	<input type="checkbox"/> 5-129	<input type="checkbox"/>	ppm
Zinc (Zn)	<input checked="" type="checkbox"/> < 5	<input type="checkbox"/>	<input type="checkbox"/>	ppm
	<input type="checkbox"/> <	<input type="checkbox"/>	<input type="checkbox"/>	ppm
	<input type="checkbox"/> <	<input type="checkbox"/>	<input type="checkbox"/>	ppm
	<input type="checkbox"/> <	<input type="checkbox"/>	<input type="checkbox"/>	ppm

TURN PAGE AND COMPLETE OTHER SIDE

(2)

DATE: 6/11/90 TIME: 4:55 PM EDT

NUMBER OF PAGES: 63 (INCLUDING COVER PAGE)

TO: YARL

ATTENTION: Doug Geller (Hong-West & Assoc)

TELEFAX NO.: 509-454-5646

FROM: Anita Kijak

TELEFAX NO.: (301) 725-4909

SPECIAL INSTRUCTIONS: Doug - This septic tank waste appears to be hazardous. The OP's (8140) exceed the lead ben. concentration limit, and 2,4-D exceeds the EP Tox concentration limit significantly. Caution: 2,4-D initial results sometimes turn out to be false positives. Confirmation is ongoing.

Stuart Cohen

IF YOU DO NOT RECEIVE ALL PAGES,
PLEASE CALL (301) 369-3900, EXTENSION: _____ NAME: Anita Kijak

☒ Corporate Headquarters
12051 Indian Creek Court
Beltville, Maryland 20705
(301) 369-3900
Telex 898 072
Telefax (301) 725-4908/09

☐ New Jersey Regional Office
525 Fellowship Road
Suite 310
Mt Laurel, New Jersey 08054
(609) 722-0100

☐ Distribution Center
82418 Sandy Court
Jessup, Maryland 20794
(301) 470-2553

*Hang West***EP TOXICITY PESTICIDES**

REFERENCED METHOD: EPA 8080

DATE COLLECTED: 06/04/90

MATRIX: Water

DATE RECEIVED: ~~06/05/90~~ 6/5/90

UNITS: mg/L

DATE EXTRACTED: ~~06/05/90~~ 6/6/90

CASE No.: CS1 (06/05)

DATE ANALYZED: 6/7/90

Client ID:		ST-90	
Lab #:	Blank	9009824	PQL
<u>Compound</u>			
Endrin	BQL	0.07	0.05 Poison B NA2761 P051
Methoxychlor	BQL	BQL	0.05
Lindane	BQL	BQL	0.05
Toxaphene	BQL	BQL	2.5
Surrogate % Rec.	*	*	

PQL - Practical Quantitation Limit

*BQL - Below practical quantitation limit*** - Surrogates diluted out because of high matrix interference.*

Hang West

~~REP~~ TOXICITY HERBICIDES

REFERENCED METHOD: EPA 8150

DATE COLLECTED: 06/04/90

MATRIX: Water

DATE RECEIVED: ~~06/05/90~~ 6/5/90

UNITS: mg/L

DATE EXTRACTED: ~~06/05/90~~ 6/6/90

CASE No.: CS1 (06/05)

DATE ANALYZED: 6/7-11/90

Client ID:	ST-90		
Lab #:	Blank	9009824	PQL
<u>Compound</u>			
2,4-D	BQL	6800	1200 ORM-A NA2765 4240
Silvex	BQL	BQL	1200
Surrogate % Rec.	*	*	1200

PQL - Practical Quantitation Limit

BQL - Below ^{practical} Quantitation Limit

* - Surrogate diluted out because of high target compound concentration

Hong West

EP TOXICITY ORGANOPHOSPHATE PESTICIDES

REFERENCED METHOD: 8140

DATE COLLECTED: 06/04/90

MATRIX: Water

DATE RECEIVED: ~~06/05/90~~ 6/5/90

UNITS: mg/L

DATE EXTRACTED: ~~06/05/90~~ 6/6/90

CASE No.: CS1 (06/05)

DATE ANALYZED: 6/8/90

Client ID:		ST-90	
Lab #:	Blank	9009824	PQL
<u>Compound</u>			
Phorate	BQL	BQL	10
Parathion	BQL	(34)	10 Poison B NA2783 P089
Disulfoton	BQL	(82)	10 Poison B NA2783 P039
Methyl Parathion	BQL	BQL	10
Surrogate % Rec.	*	*	

PQL - Practical Quantitation Limit

BQL - Below practical quantitation limit

* - Surrogate diluted out because of high target compound concentration

BIOSPHERICS INCORPORATED

HONG-WEST EP TOXICITY RESULTS-METALS

REFERENCED METHOD: EPA 1310/6010.7000's

DATE COLLECTED: June 4, 1990

MATRIX: Water

DATE RECEIVED: June 5, 1990

UNITS: mg/L

DATE EXTRACTED: June 8, 1990

CASE: CS1(06/05)

DATE ANALYZED: June 11, 1990

Client I.D.: ST-90

Lab I.D.: 9X09824

PQL

Compound:

Arsenic	< 0.5	0.5
Barium	< 10	10
Cadmium	< 0.1	0.1
Chromium	< 0.5	0.5
Lead	< 0.5	0.5
Mercury	< 0.02	0.02
Selenium	< 0.1	0.1
Silver	< 0.5	0.5

PQL - Practical Quantitation Limit

BIOSPHERICS INCORPORATED
HONG-WEST INORGANIC RESULTS

DATE COLLECTED: June 4, 1990

DATE RECEIVED: June 5, 1990

MATRIX: Water

CASE: CS1(06/05)

Client I.D.: ST-90

Lab ID: 9005824

POL

Parameter:
~~Compound:~~

Corrosivity NO
pH Units 7.66

Reactivity- NO
Cyanide, mg/L <5 5
Sulfide, mg/L <12.5 12.5

Ignitability, °C >60

PQL - Practical Quantitation Limit

(3)

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-91

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. WAD1205139157		Manifest Document No. 11111		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address U.S. Department of Agriculture 3766 NW Nel Hill Blvd. Yakima, WA 98902						A. State Manifest Document Number			
4. Generator's Phone (509) 575-5877						B. State Generator's ID			
5. Transporter 1 Company Name Oak Harbor Freight Lines						6. US EPA ID Number WAD 002748412		C. State Transporter's ID	
7. Transporter 2 Company Name						8. US EPA ID Number		D. Transporter's Phone (509) 248-2811	
9. Designated Facility Name and Site Address <input checked="" type="checkbox"/> Chempro 734 So. Lucile St. Seattle, WA (206) 762-3362 <input type="checkbox"/> Chempro 1701 Alexander, Tacoma, WA (206) 838-4774 <input type="checkbox"/> Chempro 20245 76th Ave. South Kent, WA (206) 872-8030 <input type="checkbox"/> Other:						10. US EPA ID Number WAD 000812902 WAD 020257945 WAD 991281767		E. State Transporter's ID	
								F. Transporter's Phone	
								G. State Facility's ID	
								H. Facility's Phone (206) 762-3362	
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)						12. Containers		13. Total Quantity	
						No. Type		Wt/Vol	
a. Waste Poison B Liquid, N.O.S. (Disinfectant + 2,4-D) Poison B UN2810 (POSLU 240, PO34, PO39, PO16)						17 Dm		850 G	
b.									
c.									
d.									
J. Additional Descriptions for Materials Listed Above a=Profile #44972 a=Drawings #1-17						K. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information Emergency # (509) 466-5473 GENERATOR EMERGENCY TELEPHONE (509) 768-5773						Attached CERTIFICATE OF DESTRUCTION/DISPOSAL REQUIRED			
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.									
Printed/Typed Name Nancy C. Cornstock					Signature Nancy C. Cornstock			Month Day Year 7 9 90	
17. Transporter 1 Acknowledgement of Receipt of Materials									
Printed/Typed Name [Signature]					Signature [Signature]			Month Day Year 7 9 90	
18. Transporter 2 Acknowledgement of Receipt of Materials									
Printed/Typed Name					Signature			Month Day Year	
19. Discrepancy Indication Space									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. On behalf of Chempro									
Printed/Typed Name Leslie Elliott					Signature Leslie Elliott			Month Day Year 7 10 90	

CHEMICAL PROCESSORS, INC.

734 S. Lucile St.

WAD 000812909

Seattle, WA 98108

WASTE RECEIPT

DATE 7/10 19 90 (4)

Generator Name

U.S. Dept of Ag.

Manifest

11111

Hauler

Oak Harbor Freight

P.O.

Total Containers

17

Waste Description

Quantity

Container

Waste Description

Quantity

Container

Price/Unit

Poison B17DM4000/box

Comments:

11111 Cert.

Check:

☒ Certs☒ Profile(s)☐ Credit☐ Obvious Discrepancies

Shipper

Recd. 7/10/90 17

Received By

Barbie Elliott

(5)

INSTRUCTIONS FOR LAND RESTRICTION NOTIFICATION FORM

1. Complete the Generator name section.
2. Select Box A, B1, B2, C or D. In most cases, you will check either Box A or Box C or both since you are sending your waste to CHEMPRO for treatment.
 - A. Select Box A:
 1. If you have previously used a certification on your manifest.
 2. If you turn the certification over and find your waste fits any category in Section I or carries any of the codes in Section II.
 - B. Select Box C:
 1. If your waste is now restricted under the new Third/Third restrictions.
 2. If your waste is subject to any other variance.
3. Sign and date the certification.
4. Complete Section I and/or Section II on the reverse side if you have checked Box A.
5. Make copies to use on future shipments.

A copy of the completed certification must be stapled to the manifest every time you ship this waste to a CHEMPRO facility.

If you have questions, call 223-0500 and any of our sales staff will be happy to help you.

ATTACH TO MANIFEST

5

HARD-HAMMER NOTIFICATION ADDENDUM

If you checked Box A in the Hard-Hammer Notification form, then you must also indicate the restrictions by checking the applicable boxes below.

Wastes subject to a National Capacity Variance may still be subject to the California List Restrictions listed below. Please complete section I if your waste is subject to a National Capacity Variance.

*****SECTION I - CALIFORNIA LIST*****

A. This waste was a liquid hazardous waste, when it was initially generated and currently fails the paint filter test for solids. And at least one of the following statements is true (check all that apply):

____ 1. (Metals) - contains metals equal to or greater than the amounts listed below: (check each that applies):

____ Arsenic...500 ppm, ____ Lead....500 ppm, ____ Selenium..100 ppm
 ____ Cadmium...100 ppm, ____ Nickel..134 ppm, ____ Thallium..130 ppm
 ____ Chromium..500 ppm, ____ Mercury..20 ppm,

- ____ 2. (Acids) - Has a pH of 2 or less
 ____ 3. (Cyanides) - Contains 1000 ppm or more FREE cyanides
 ____ 4. (PCBs) - Contains 50 ppm or more Polychlorinated Biphenyls

B. This waste was a liquid or nonliquid hazardous waste, when it was initially generated, and the following statement is true:

☒ 1. (HOCs) - the waste contains HOCs (Halogenated Organic Compounds listed in 40 CFR Part 268, Appendix III) in total concentration greater than or equal to 1,000 ppm.

*****SECTION II - SOLVENT AND OTHER HARD-HAMMER WASTES*****

This waste is a (check one): ☒ wastewater, ____ nonwastewater. This waste may be in any physical form (solid, liquid, sludge, gas, etc.) but it requires treatment for the constituents listed in 40 CFR Part 268 Subpart D that are related to the following codes. Check all codes that apply to this waste and require treatment:

____ F001	____ K001	____ K019	____ K038	____ K086	____ K114	____ P063	____ P121
____ F002	____ K004	____ K020	____ K039	____ K087	____ K115	____ P071	____ U028
____ F003	____ K005	____ K021	____ K040	____ K093	____ K116	____ P074	____ U058
____ F004	____ K007	____ K022	____ K043	____ K094	____ P013	____ P085	____ U069
____ F005	____ K008	____ K023	____ K044	____ K095	____ P021	<input checked="" type="checkbox"/> P089	____ U087
____ F006	____ K009	____ K024	____ K045	____ K096	____ P029	____ P094	____ U088
____ F007	____ K010	____ K025	____ K046	____ K099	____ P030	____ P097	____ U102
____ F008	____ K011	____ K027	____ K047	____ K100	<input checked="" type="checkbox"/> P039	____ P098	____ U107
____ F009	____ K013	____ K028	____ K060	____ K101	____ P040	____ P099	____ U190
____ F010	____ K014	____ K029	____ K061	____ K102	____ P041	____ P104	____ U221
____ F011	____ K015	____ K030	____ K062	____ K103	____ P043	____ P106	____ U223
____ F012	____ K016	____ K036	____ K069a	____ K104	____ P044	____ P109	____ U235
____ F024	____ K018	____ K037	____ K083b	____ K113	____ P062	____ P111	

MAILING ADDRESS:
P.O. Box 417
Boise, Idaho 83701-0417
(208) 384-1500

Application 9681
copy sent 11-19-90
GENERATOR WASTE PRODUCT QUESTIONNAIRE

ENVIROSAFE SERVICES OF IDAHO, INC.

U.S. EPA ID. Number IDD073114654

FACILITY ADDRESS
10 1/2 Miles NW Grandview
Missile Base Road
Grandview, Idaho 83624

SECTION A - GENERATOR DATA

1. Generator USDA Yakima Agricultural Research Lab
Address 3706 West Nob Hill Blvd.
City/State Yakima WA ZIP 98920
Tech. Contact Chem-Safe Services TEL 509-968-3973

U.S. EPA IDENTIFICATION NUMBER

WA D 120513 957

2. Billing/Broker Chem-Safe Services, Inc.

Address P.O. Box 616
City/State Kittitas WA ZIP 98934
Billing Contact Ralph Allphin TEL 509-968-3973

☒ NEW ☐ RENEWAL

Envirosafe Services Only

Application # 9681

PCN 2276A

CUST #

☐ DIRECT ☐ ACES
☐ BILLING BROKER

Sales Zone Code

TAX ☐ YES ☐ NO

Cell 5 Waste ☐

MANIFEST CERTIFICATION REQUIRED ☐

SECTION B - WASTE CHARACTERIZATION

1. Common Name for This Waste: Soil with pesticides
2. Process Generating This Waste: Drain Field From septic Tank and
surrounding area
3. Annual Quantity: 30-40 ☐ Tons ☒ Yards ☐ Gallons 3.1 ☐ Drums
(Annual Quantity)
4. Shipment Duration: one time 5. Shipment Mode:
☐ Permanent (1 Year or Longer) ☒ Bulk ☐ Palletized Boxes ☐ Woven Cloth Bags ☐ Metal Drums
☒ Temporary (Less Than 1 Year) ☐ Other:

SECTION C - PHYSICAL PROPERTIES

As Shipped To ESI

1. Is waste shipped different than waste as produced at initial point of generation? ☐ YES ☒ NO
If yes, must include Attachment A to describe waste as initially generated.

2. Describe physical state at 70°F
☒ Dry Solid ☐ Damp Solid ☐ Powder ☐ Semi-Solid/Gel ☐ Flowable Liquid ☐ Labpack
☐ Other SOIL

3. Describe Load Bearing Strength at 70°F: ☒ Solid/Rigid ☐ Sludge ☐ Weak/None

3.1 Penetrometer PSI: 3.2 % Solids @105°C: 100

4. Describe Physical Appearance of Waste (Include Color): Brown Dirt, Rocks, Blue Tarp, Clear Tarp, Black Tarp 5. Apparent Density of Waste: Lb./Cu. Yard

6. Flash Point: ☐ <70°F ☐ 70-100°F ☐ 101-140°F ☐ 141-200°F ☒ >200°F 6.1 Actual Flash Pt: °F 6.2 Combustible: ☐ Yes ☒ No

7. pH Range (50% Slurry in Distilled Water for Solid) 6-8 7.1 Actual pH (S.U.): 7.66

8. Describe Odor of Waste:
☐ None ☒ Slight ☐ Strong
Describe Fresh Soil

9. Viscosity (Liquids): Similar to
☐ Water ☐ Motor Oil ☐ Honey
☐ Other

10. Debris in Waste:
☒ Yes ☐ No Describe pieces of Tarp, cans, paper (x 10% or less)

11. Potential for presence/Separation of incidental liquids during transport:
☐ Yes ☒ No

PCN		22	76	A		
-----	--	----	----	---	--	--

As Shipped To ESII

- 2, RCRA EPA Waste Code(s) from 40 CFR 261:

D	O	0	4	D	O	0	7	P	0	5	0	u	0	6	1								
D	O	0	5	O	0	0	8	P	0	3	7	u	2	4	7								
D	O	0	6					u	0	6	0	D	0	1	4								

3. Does Waste Contain the Following:

☐ YES ☒ NO
☐ YES ☒ NO
☐ YES ☒ NO

If YES, Explain in Section H

4. State Waste Codes: State of Washington

WT	0	2	

☐ NOT APPLICABLE

1. D.O.T. Hazardous Material? ☒ Yes ☐ No 2. D.O.T. RQ Required: ☒ Yes ☐ No ☐ N/A

3. Proper D.O.T. Shipping Name: Hazardous waste, solid, n.o.s. "RQ" 10,000
4. D.O.T. Hazard Class: ORM-E 5. D.O.T. ID Number: NA9189
6. Additional D.O.T. Description: Soil with trace metals (P050 P037 H060, H061)

SECTION H - ADDITIONAL COMMENTS

1. Additional Comments, Descriptions, or Waste Stream Information:

PROCESS DIAGRAM OR PHOTOGRAPH

[illegible]

1. Is this waste the result of a product spill clean-up? (☒ Yes) ~~(☐ No)~~

2. Has this waste been treated by: ☐ Solidification (solely using absorbents)
☐ Stabilization (irreversible chemical transformation or encapsulation) ☒ N/A

3. If solidified or stabilized list all additives in Section D.

4. Does this waste pass the EPA specified Paint Filter Test? ☒ Yes ☐ No

5. Are the total Halogenated Organic Compounds present in this waste, as shipped to ESII, at the following levels?
- ☒ None Present ☐ 10 to 99 mg/Kg ☐ 100 to 499 mg/Kg ☐ 500 to 999 mg/Kg ☐ > 1000 mg/Kg *u/c.*

6. Is this waste regulated under a Land Disposal Ban as promulgated in CFR 40 part 268 or RCRA §3004? ☒ Yes ☐ No
7. If 6 was answered yes; Is this waste currently allowed to be Land Disposed under a regulatory Variance or Exception? ☒ Yes ☐ No

8. If 7 was answered yes, please provide the applicable Variance or Exception information below:

- ☐ RCRA Corrective Action Waste (3004u or 3008h) ☐ CERCLA Response Action Waste (Sec. 104 or 106)
☐ Meets Established BDAT Standards (**MUST ATTACH** complete analytical data on required parameters)

☒ Other Variance/Exception: (Explain)

NCV = National Capacity Variance

223-7791

(7)

NATIONAL CHEM LAB
103 12th Avenue SW
Ephrata, WA. 98823
(509) 754-5725

Environmental Analysis Report

NCL Report #: WE0121807

Sample #: 1

Customer: CHEM SAFE

PO #:

Received: 12/18/90 11:20

Received By: BILL

Sample Source: USDA AG LAB (SOIL)

Parameter	Results	Date & Time Analyzed	Method
ARSENIC	<1.0 mg/L	12/18/90 10:15	206.1, 206.3
BARIUM	<10.0 mg/L	12/18/90 08:30	208.1, 208.2
CADMIUM	<1.0 mg/L	12/18/90 09:40	213.1, 213.2
CHROMIUM	<1.0 mg/L	12/18/90 13:45	218.1, 218.2
LEAD	<1.0 mg/L	12/19/90 11:10	239.1, 239.2

TCLP

Approved By



Date 12-21-90

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

WAD120513957

Manifest Document No. 01027

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
USDA Yakima Agricultural
3706 W. Nob Hill
Blud. Yakima WA 98920
4. Generator's Phone (509) 575-5877

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name

PACIFIC COAST ENVIRONMENTAL ORD947166352

C. State Transporter's ID

D. Transporter's Phone 503-285-6747

7. Transporter 2 Company Name

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address

EnviroSak Services of Idaho, Inc.
10 1/2 miles N.W. Grandview, missile Base Rd.
Grandview, Id. 83624

10. US EPA ID Number

EDD 073 114 654

G. State Facility's ID

H. Facility's Phone

(208) 384-1500

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

HM
a. RC Hazardous Waste Solid, n.e.s. ORM-E. NA9189
(Endosulfan I, II, Dieldrin)
(P050, P037, U060, U061, U247, D014)

12. Containers

No. Type

2 M

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13. Total Quantity

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14. Unit

Wt/Vol

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15. Waste No.

WT02 U061

P050 U247

P037 D014

U060 D014

U060 D014

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U060 D014

J. Additional Descriptions for Materials Listed Above

A=WPA# 9681 (soil with; Endosulfan I and II, 4,4'-DDT, methoxychlor, Dieldrin, AOD, DDE, P.D.T., Endosulfan sulfate)

K. Handling Codes for Wastes Listed Above

Landfill-Variation
03

15. Special Handling Instructions and Additional Information

A= PCN # 2276A

Emergency CONTACT (509) 968-3913

manifest Notification Attached

16. GENERATOR CERTIFICATION. I hereby declare that the contents of this manifest are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

Michael R. Wiggert

Signature

Michael R. Wiggert

Month Day Year

06/12/91

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Jack Weatherill

Signature

Jack Weatherill

Month Day Year

06/12/91

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Michael R. Wiggert

Signature

Michael R. Wiggert

Month Day Year

06/12/91

19. Discrepancy Indication Space

122. 2000 (1 DT) change to "2 cm" per Nancy Madarieta ESS I 10/3/91
Mike Wiggert 6-13-91 @ 10:30

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name

NANCY MADARIETA

Signature

Nancy Madarieta

Month Day Year

10/11/91

ORIGINAL-RETURN TO GENERATOR

MANIFEST NOTIFICATION

DATE:

6/12/91

MANIFEST NO.:

01027

GENERATOR: USDA

EPA ID NO.: WAD120513957

EPA WASTE CODES: P050, P037, U060,
U061, U247, D014

WASTE DESCRIPTION: SOIL WITH PESTICIDES

THIS MATERIAL IS A RESTRICTED WASTE, UNDER RCRA SECTION 3004 (D) AND CFR 40 PART 268 DUE TO HAVING BEEN INITIALLY GENERATED AS NON-WASTEWATER WITH THE ABOVE LISTED WASTE CODES. ALL APPLICABLE WASTE CODES, BOTH LISTED AND CHARACTERISTIC, HAVE BEEN FULLY DISCLOSED. TOTAL HOC'S FROM 40 CFR 268 APPENDIX III ARE LESS THAN 1000 PPM.

This waste is subject to a national capacity variance under 40 CFR Part 268.35 (c) and effective 5/8/92 is prohibited from land disposal unless all treatment standards, as expressed in 40 CFR Part 268, are met.

Treatment Standard 23.43(a) CCW constituent concentration in waste non-wastewater in m/kg:

NonWastewater

P050	Endosulfan I	0.066
	Endosulfan II	0.13
	Endosulfan Sulfate	0.13
P037	Dieldrin	0.13
U060	DDD o,p' & p,p	0.087
U061	DDT o,p' & p,p	0.087
	DDD o,p' & p,p	0.087
	DDE o,p' & p,p	0.087
U061	Methoxychlor	0.18
	Methoxychlor	0.18

I certify that as a authorized representative of the Generator above, all information submitted in this notification is true and correct to the best of my knowledge.

Name

W. R. Wiggert

Date

6/12/91

PCN Number

2276A

/8/90

91165003 245240

UNIFORM HAZARDOUS
WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest
Document No.2. Page 1
of 1Information in the shaded areas is
not required by Federal law.

3. Generator's Name and Mailing Address

USDA Agricultural Research
3706 W. Noble Hill Blvd.

Yakima WA 98900

4. Generator's Phone (509) 575-5877

5. Transporter 1 Company Name

Thermox Industries, Inc.

6. US EPA ID Number

ID0984667485

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address

EnviroSafe Services of Idaho

10.5 miles N.W. of Grandview

Grandview, ID 83624

10. US EPA ID Number

ID00073117657

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

a. Hazardous Waste, Solid N.O.S., ORM-E,
NA 9189 (Endosulfan I, Dieldrin)
(POSO, DOT 3, 4060 4061 4247, DOT 4)

12. Containers

No. Type

240 DT

13. Total
Quantity

23 T

14. Unit
Wt/Vol

T

15. Waste No.

WTR, 4061
POSO, DOT 3, 4247, DOT 4

J. Additional Descriptions for Materials Listed Above

A=WPD# 9661 (Solid with Endosulfan I, II and
sulfate, DDD, DDT, DDE, Dieldrin
and methoxychlor)

K. Handling Codes for Wastes Listed Above

Landfill - Variance
03

15. Special Handling Instructions and Additional Information

A=PLN# 2276A

(Emergency Contact (509) 968-3973 manifest Notification)

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

Judith A. Wilkinson

Signature

Judith A. Wilkinson

Month Day Year

6/13/91

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Curtiss E. Perkins

Signature

Curtiss E. Perkins

Month Day Year

06/13/91

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

. . .

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name

NANCY MADARIETA

Signature

Nancy Madarieta

Month Day Year

06/14/91

ORIGINAL - RETURN TO GENERATOR

MANIFEST NOTIFICATION

DATE:

6/12/91

MANIFEST NO.:

01028

GENERATOR: USDA

EPA ID NO.: WAD120513957

EPA WASTE CODES: P050, P037, U060,
U061, U247, D014

WASTE DESCRIPTION: SOIL WITH PESTICIDES

THIS MATERIAL IS A RESTRICTED WASTE, UNDER RCRA SECTION 3004 (D) AND CFR 40 PART 268 DUE TO HAVING BEEN INITIALLY GENERATED AS NON-WASTEWATER WITH THE ABOVE LISTED WASTE CODES. ALL APPLICABLE WASTE CODES, BOTH LISTED AND CHARACTERISTIC, HAVE BEEN FULLY DISCLOSED. TOTAL HOC'S FROM 40 CFR 268 APPENDIX III ARE LESS THAN 1000 PPM.

This waste is subject to a national capacity variance under 40 CFR Part 268.35 (c) and effective 5/8/92 is prohibited from land disposal unless all treatment standards, as expressed in 40 CFR Part 268 are met.

Treatment Standard 268.43(a) CCW constituent concentration in waste non-wastewater in mg/kg:

NonWastewater

P050 Endosulfan I	0.066
Endosulfan II	0.13
Endosulfan Sulfate	0.13
P037 Dieldrin	0.13
U060 DDD o,p' & p,p'	0.087
U061 DDT o,p' & p,p'	0.087
DDD o,p' & p,p'	0.087
DDE o,p' & p,p'	0.087
U247 Methoxychlor	0.18
D014 Methoxychlor	0.18

I certify that as an authorized representative of the Generator named above, all information submitted in this notification is true and correct to the best of my knowledge.

Judith A. Wilkinson
Printed Name

6-13-91
Date

Judith G. Wilkinson
Signature

2276A
PCN Number

Effective 8/8/90

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No.

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
 USDA Yakima Agricultural Research Lab
 3706 W. Nob Hill Blvd.
 Yakima, WA 98920
 4. Generator's Phone (509) 575-5877

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name
 Thermax Industries, Inc.

6. US EPA ID Number
 ID.D9.84.66.74.85

C. State Transporter's ID

D. Transporter's Phone 1-800-238-8357

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
 EnviroSafe Services of Idaho, Inc.
 0.5 mile N.W. of Grandview, ID
 83624

10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

12. Containers

13. Total Quantity

14. Unit Wt/Vol

Waste No.

a. Hazardous Waste, Solid, N.O.S., ORM-E
 NA9189 (Endosulfan I, Diol form)
 P050, P037, U060, U061, U247, D014

No. Type
 23 T

Waste No.
 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500

J. Additional Descriptions for Materials Listed Above

A=WPC# 9681 (Soil with Endosulfan I, I#4
 Sulfate, DDD, DDE, DD, Diol form
 4 methoxychlor)

K. Handling Codes for Wastes Listed Above

Landfill - Variance
 03

15. Special Handling Instructions and Additional Information

A=PCN# 2276A

Emergency Contact (509) 968-3473 Manifest + Notification Attached

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name
 Judith A. Wilkinson

Signature
 Judith A. Wilkinson

Month Day Year
 16 13 91

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name
 Donny Geisinger

Signature
 Donny Geisinger

Month Day Year
 16 13 91

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name
 NANCY MADARIETA

Signature
 Nancy Madarieta

Month Day Year
 10 6 14 91

ORIGINAL-RETURN TO GENERATOR

MANIFEST NOTIFICATION

DATE: 6/12/91

MANIFEST NO.: 01029

GENERATOR: USDA

EPA ID NO.: WAD120513957

EPA WASTE CODES: P050, P037, U060,
U061, U247, D014

WASTE DESCRIPTION: SOIL WITH PESTICIDES

THIS MATERIAL IS A RESTRICTED WASTE, UNDER RCRA SECTION 3004 (D) AND CFR 40 PART 268 DUE TO HAVING BEEN INITIALLY GENERATED AS NON-WASTEWATER WITH THE ABOVE LISTED WASTE CODES. ALL APPLICABLE WASTE CODES, BOTH LISTED AND CHARACTERISTIC, HAVE BEEN FULLY DISCLOSED. TOTAL HOC'S FROM 40 CFR 268 APPENDIX III ARE LESS THAN 1000 PPM.

This waste is subject to a national capacity variance under 40 CFR Part 268.35 (c) and effective 5/8/92 is prohibited from land disposal unless all treatment standards, as expressed in 40 CFR Part 268 are met.

Treatment Standard 268.43(a) CCW constituent concentration in waste non-wastewater in mg/kg:

NonWastewater

P050 Endosulfan I	0.066
Endosulfan II	0.13
Endosulfan Sulfate	0.13
P037 Dieldrin	0.13
U060 DDD o,p' & p,p'	0.087
U061 DDT o,p' & p,p'	0.087
DDD o,p' & p,p'	0.087
DDE o,p' & p,p'	0.087
U247 Methoxychlor	0.18
D014 Methoxychlor	0.18

I certify that as an authorized representative of the Generator named above, all information submitted in this notification is true and correct to the best of my knowledge.

Judith A. Wilkinson
Printed Name

6-13-91
Date

Judith A. Wilkinson
Signature

2276 A
PCN Number

Effective 8/8/90